

186

SERVICE  
MANUAL **1180DC**

**marantz**

model **1180DC**

*Stereo Console Amplifier*

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## 1. POWER AMPLIFIER ADJUSTMENT

### 1.1 DC-OFFSET Adjustment

Connect VTVM to JN01 and JN05 (or ground) and adjust left channel R739 until the meter indication reaches 0 mV ( $\pm 5$  mV). Similarly, connect VTVM to JN04 and JN06 (or ground) and adjust right channel R740 until the meter indication reaches 0 mV ( $\pm 5$  mV).

## 2. TEST EQUIPMENT REQUIRED FOR SERVICING

Table 1 lists the test equipment required for servicing the Model 1180DC Stereo Console Amplifier. The wattmeter, AC voltmeter, and variable autotransformer may be assembled as a test fixture as shown schematically in Figure 1. The load resistors and AC ammeter may be assembled into a second test fixture as shown in Figure 2.

Table 1. Test Equipment Required for Servicing

Item	Manufacturer and Model No. (or equivalent)	Use
Distortion Analyzer and Audio Oscillator	Sound Technology, Model 1700B (NOTE: Less than 0.002 percent residual distortion is required.)	Measures distortion, voltage of amplifier output and sinewave source
Oscilloscope	Tektronix, Model 503 Data, Model 555	Waveform analysis and troubleshooting.
VTVM	RCA Senior Volt-Ohmyst, Model WV-98C	Voltage and resistance measurements.
AC Wattmeter	Simpson, Model 390	Monitors primary power consumption of amplifier.
AC Ammeter (0 to 10 amps)	Commercial Grade	Monitors amplifier output under short circuit condition.
Line Voltmeter (0 to 150V AC)	Commercial Grade	Monitors potential of primary power to amplifier.
Variable Autotransformer (0 to 140 V AC, 10 amps)	Powerstat, Model 116B	Adjusts level of primary power to amplifier.
Shorting Plug	Use phono plug with 600 ohms across center pin and shell.	Shorts amplifier input to eliminate noise pickup.
Power Supply Bleeder Resistor (10 ohms at 1 W)	Commercial Grade	Discharges power supply filter capacitors prior to disassembly or resistance measurements.
Output Load Resistor ( $8 \Omega \pm 0.5\%$ , 250W)	Commercial Grade	Provides 8-ohm load for amplifier output termination.
Output Load Resistor ( $4 \Omega \pm 0.5\%$ , 250W)	Commercial Grade	Provides 4-ohm load for amplifier output termination.
Output Load Capacitor (0.5 mfd)	Mylar	Provides capacitive load for instability checks.
AC Power Control Box	Optional Item. Fabricate in accordance with Figure 1.	Monitors and controls primary power for amplifier.
Amplifier Output Load Box	Optional Item. Fabricate in accordance with Figure 2.	Provides various amplifier loads and can monitor shorted output.

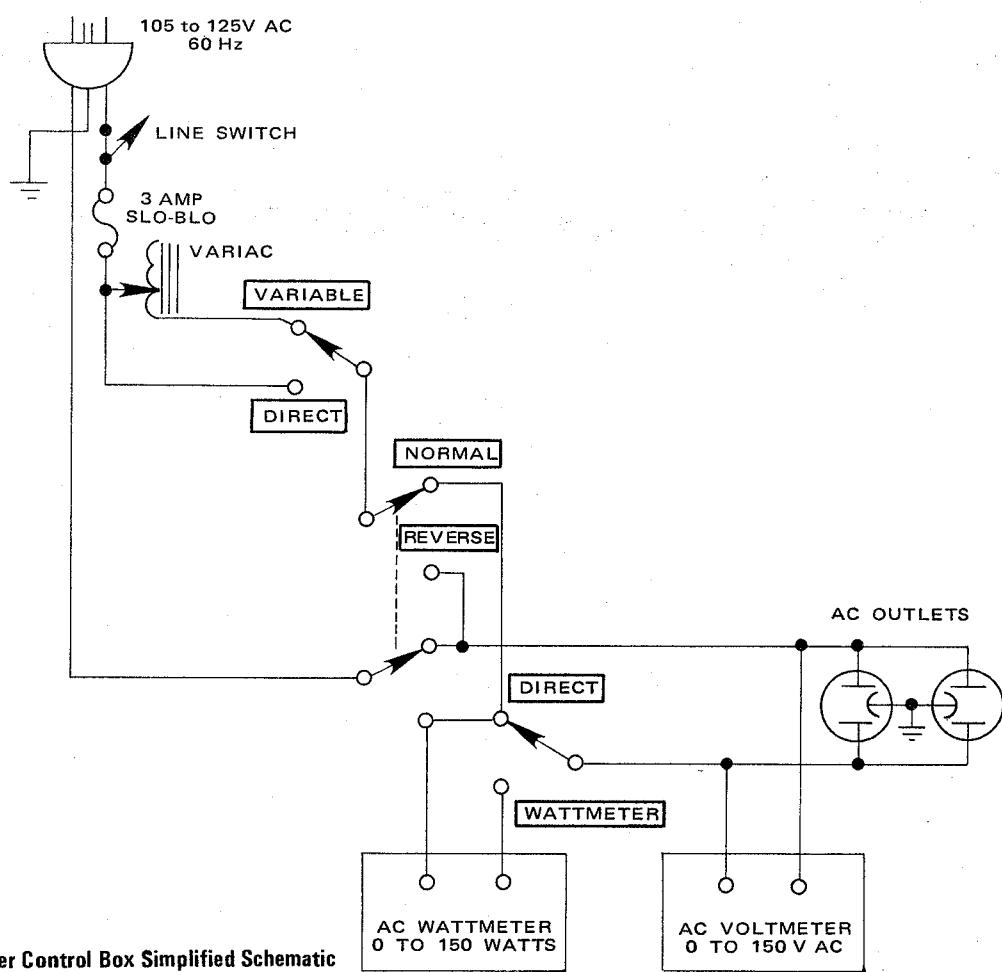


Figure 1. AC Power Control Box Simplified Schematic

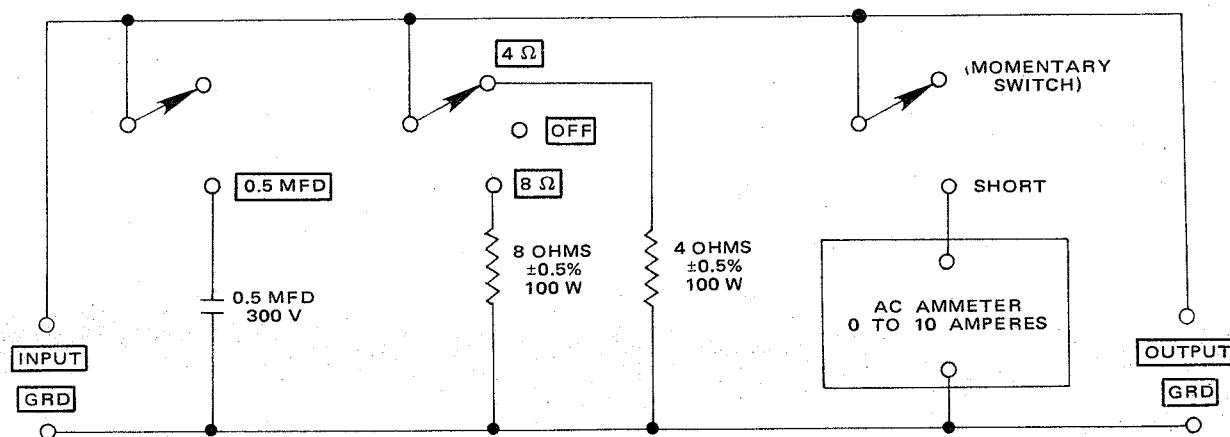


Figure 2. Amplifier Output Load Box Simplified Schematic

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### 3. VOLTAGE CONVERSION

#### ● EUROPEAN MODEL ONLY

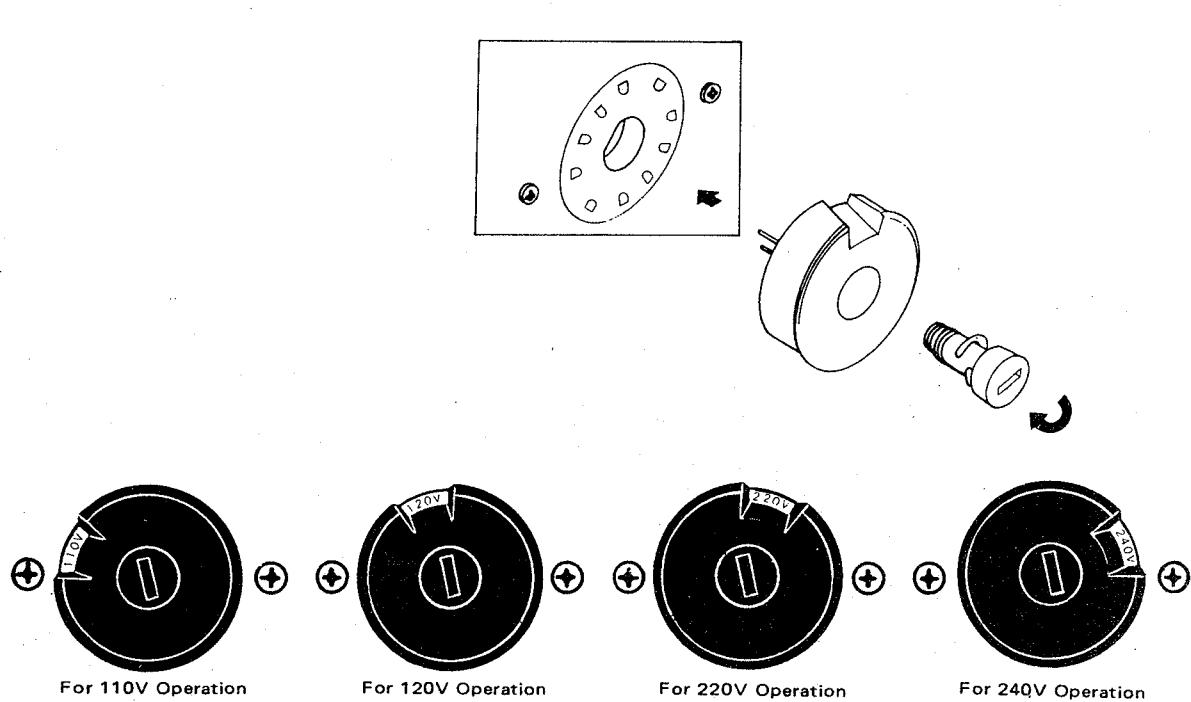
This Model is equipped with a universal power transformer to permit operation at 110, 120, 220 and 240 V AC 50/60 Hz.

To convert the unit to the required voltage, set the plug as illustrated so that you can adjust the voltage as required.

#### CAUTION

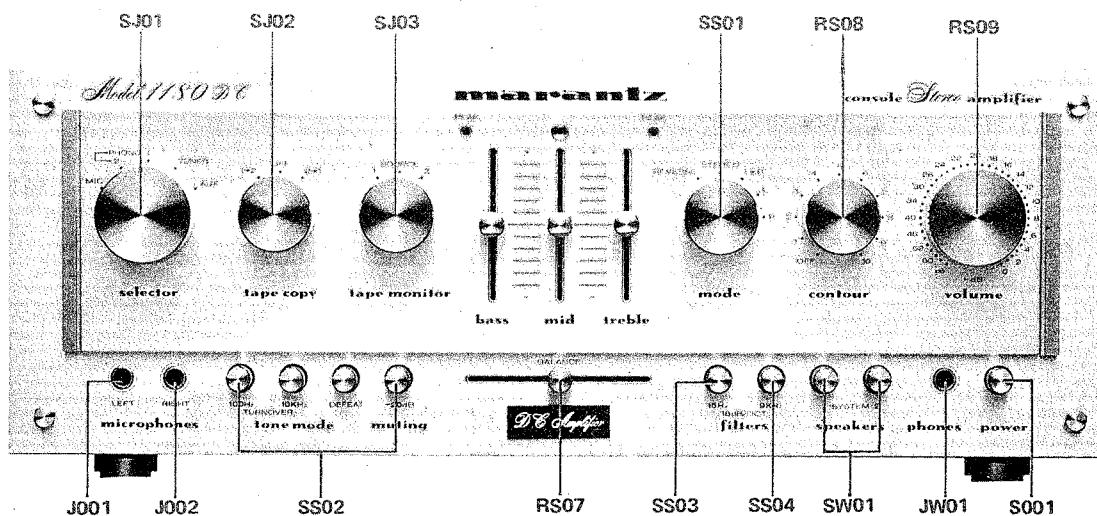
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.

Figure 3. Voltage Conversion Chart

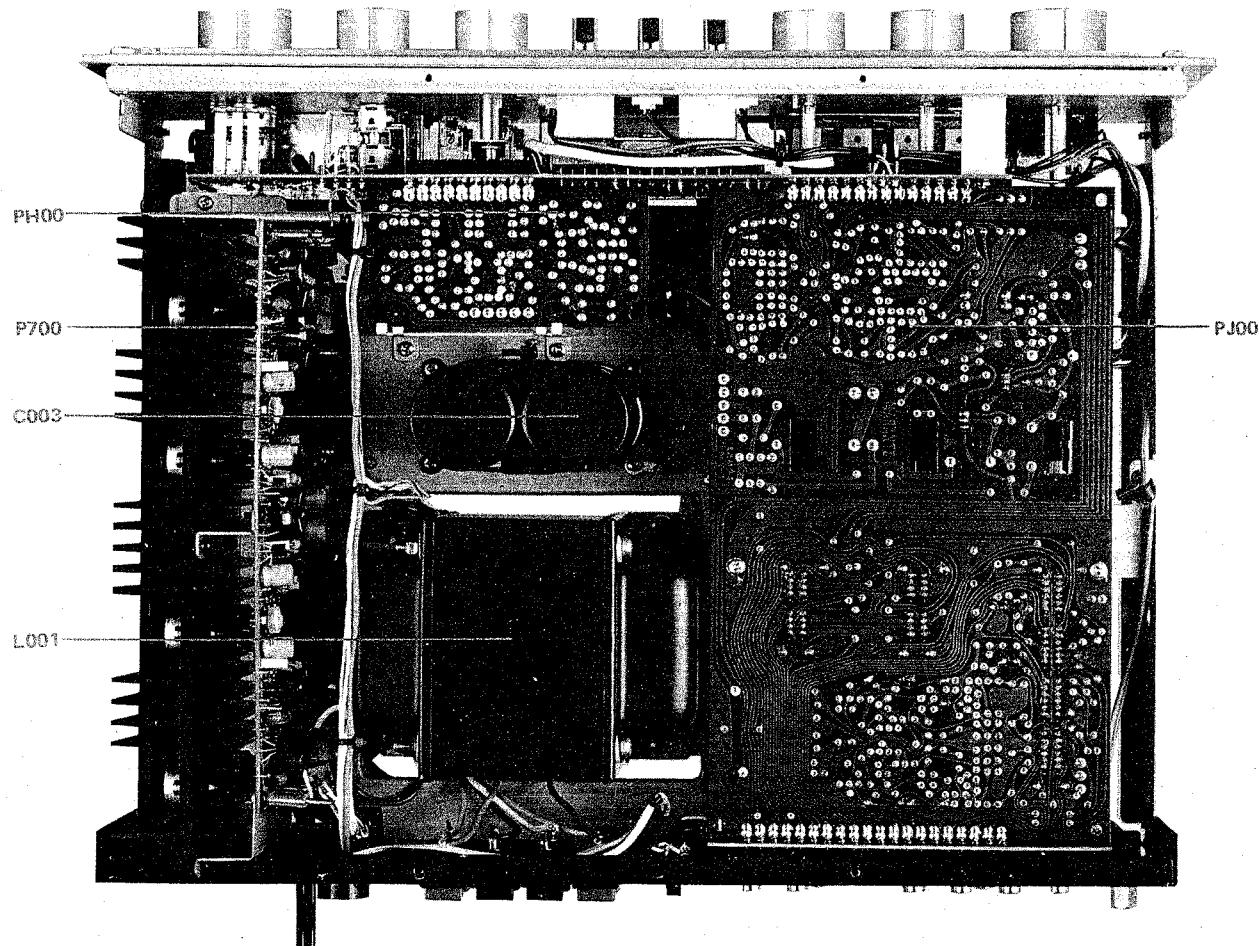


## 4. MAJOR COMPONENT LOCATIONS

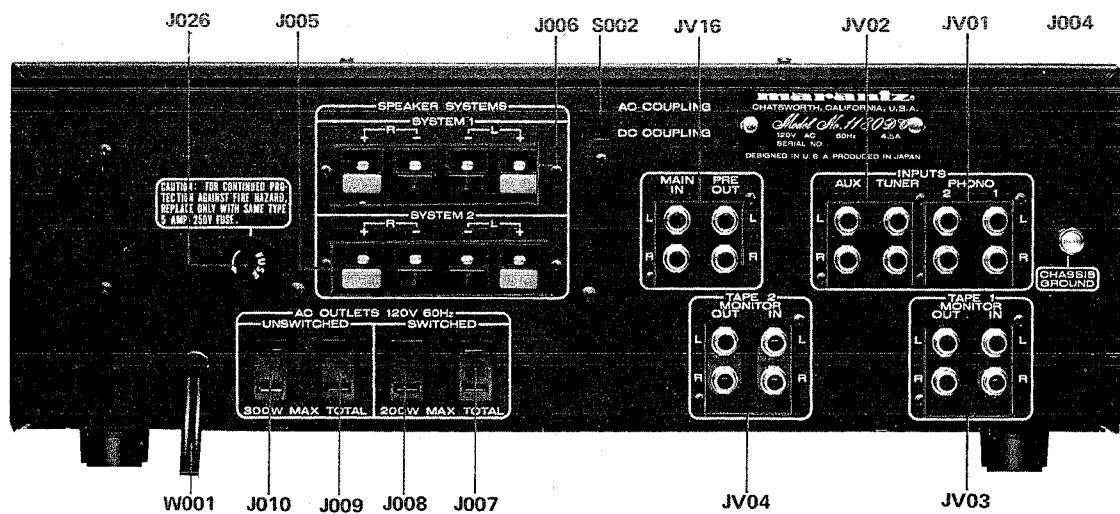
### 4.1 Front Panel Adjustment and Component Locations



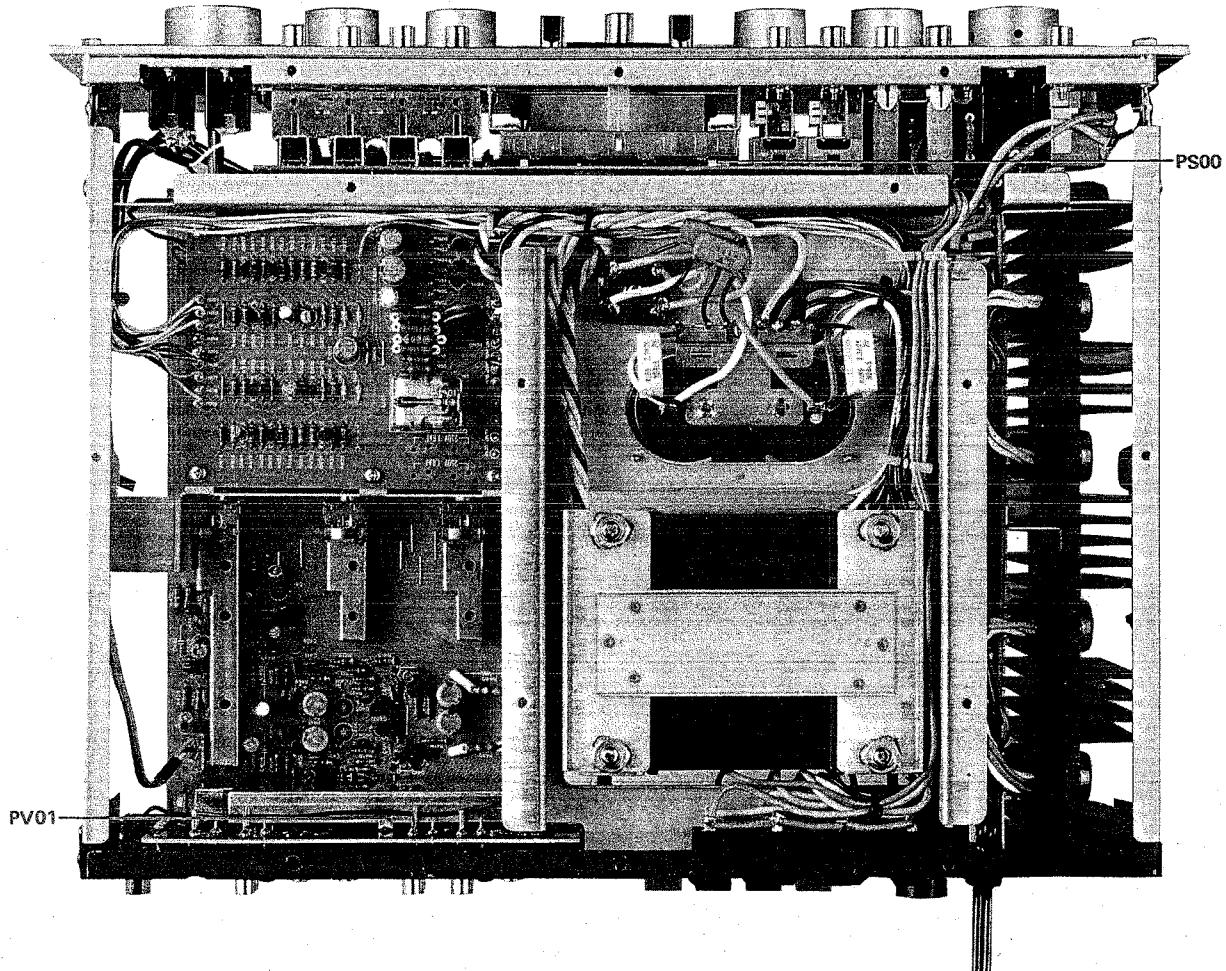
### 4.2 Main Chassis Component Locations (Top View)



#### 4.3 Rear Panel Adjustment and Component Locations

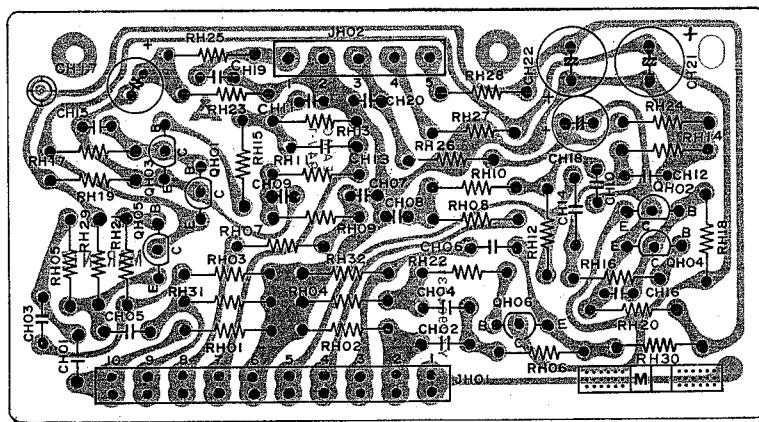
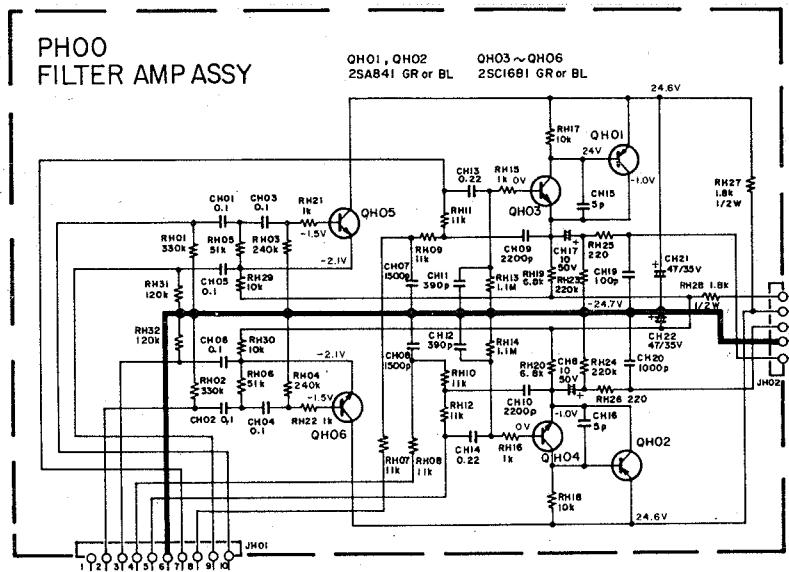


#### 4.4 Main Chassis Component Locations (Bottom View)

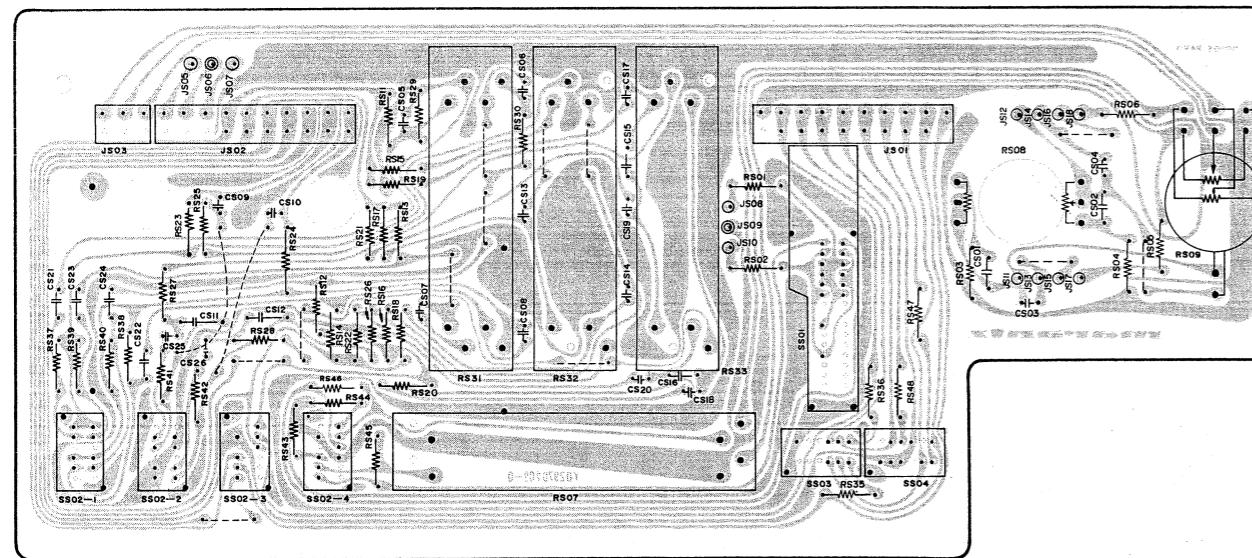
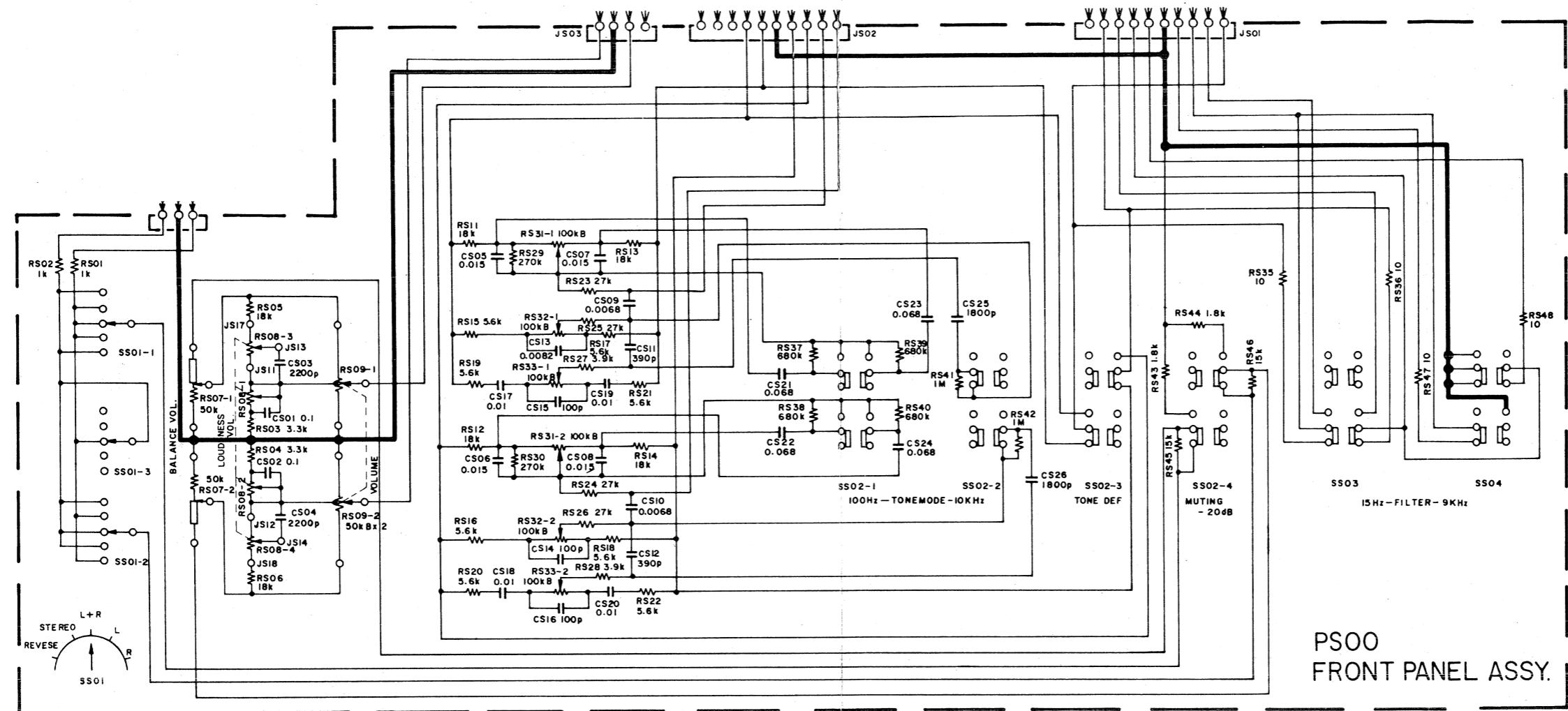


## 5. DIAGRAM AND COMPONENT LOCATIONS

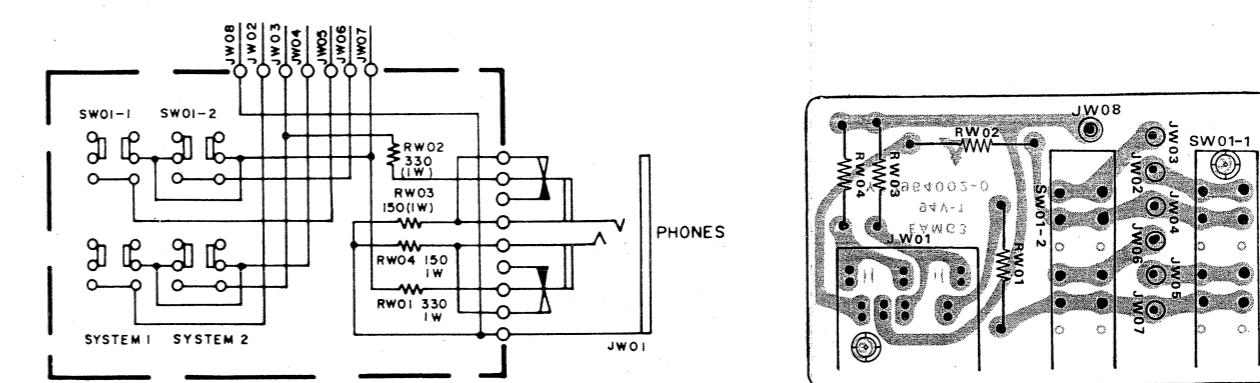
### 5.1 Filter Amp. Assembly (PH00) Schematic Diagram and Component Locations



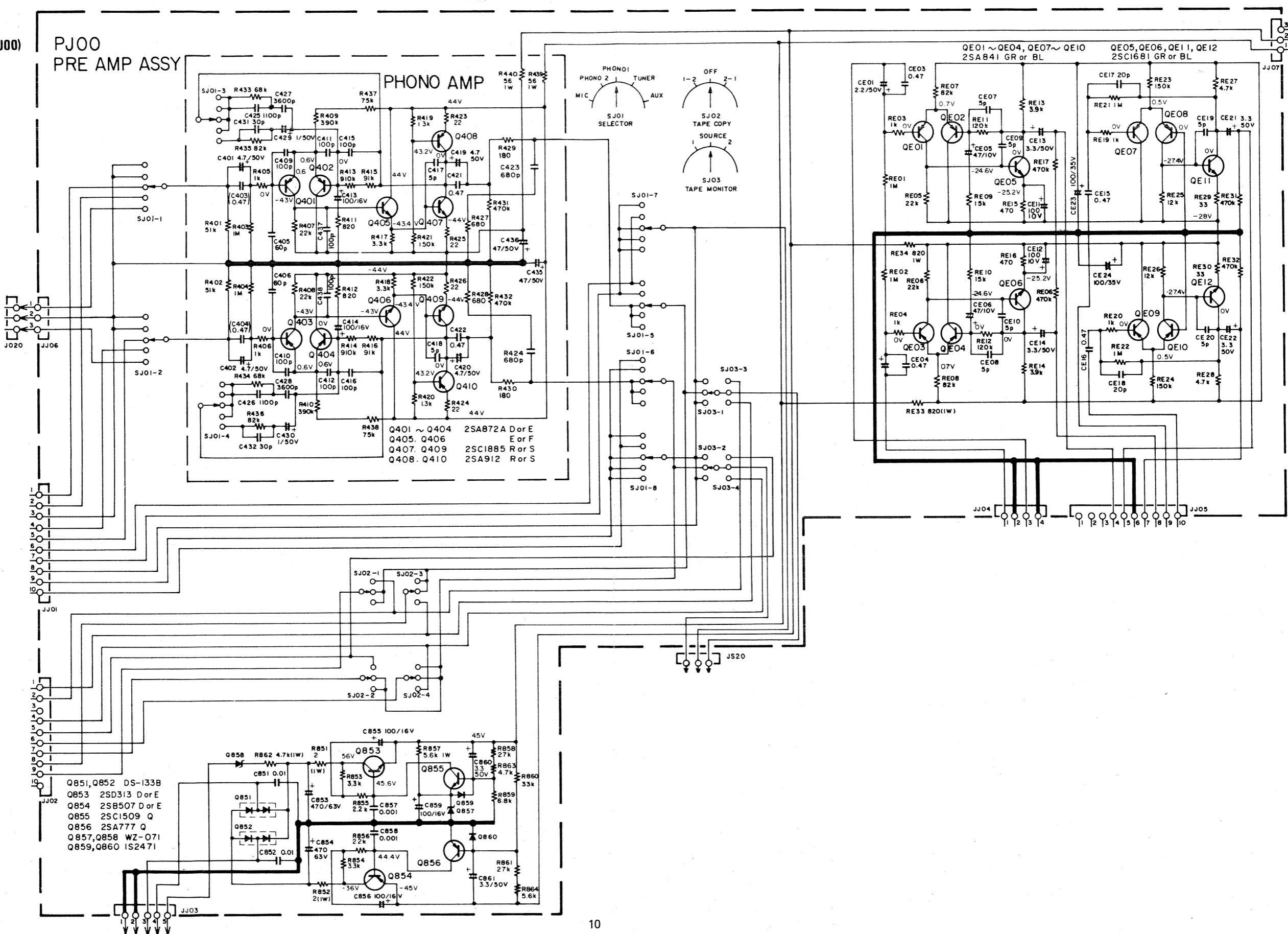
## 5.2 Front Panel Assembly (PS00) Schematic Diagram and Component Locations



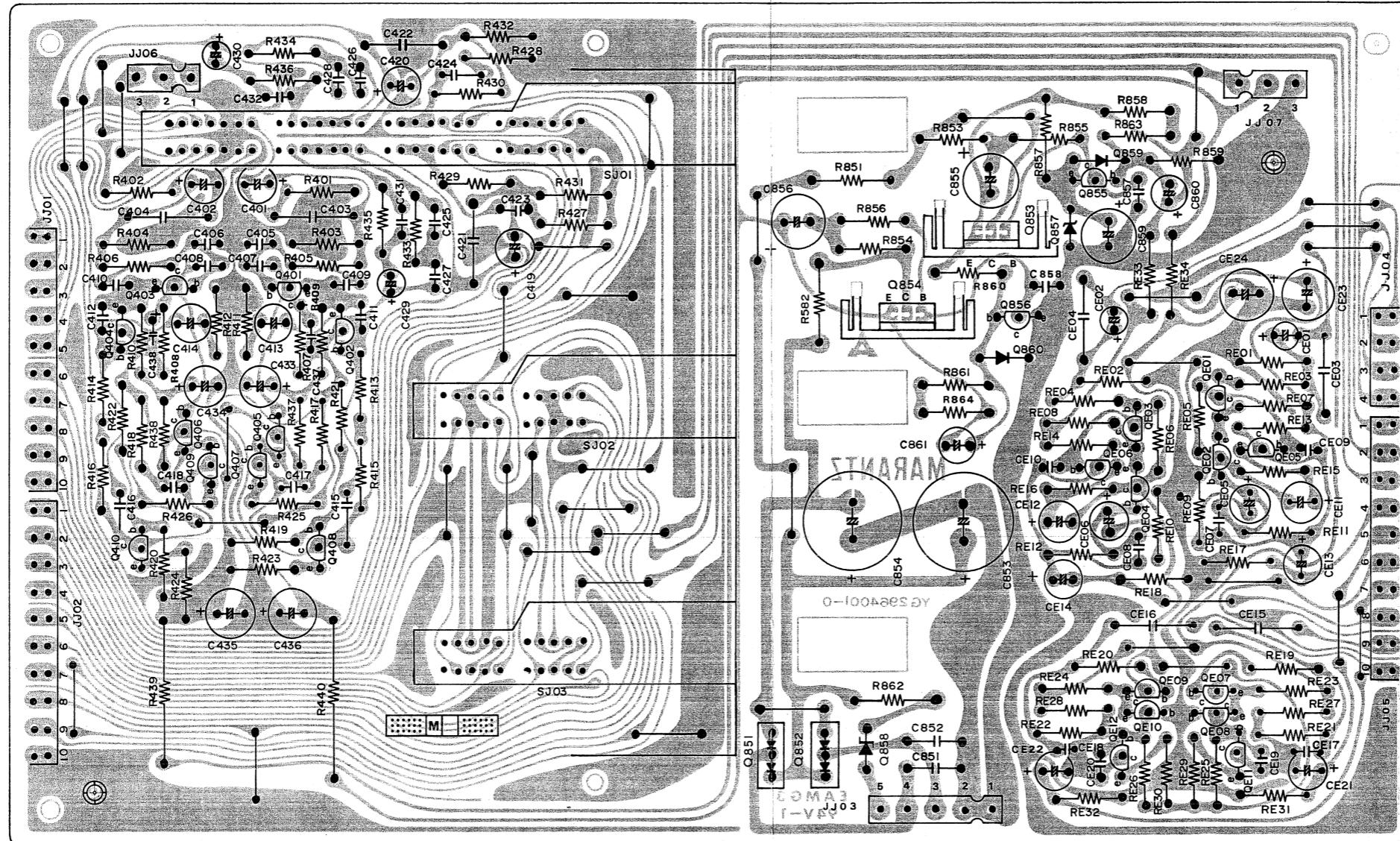
## 5.3 Speaker Switch Assembly (PW00) Schematic Diagram and Component Locations



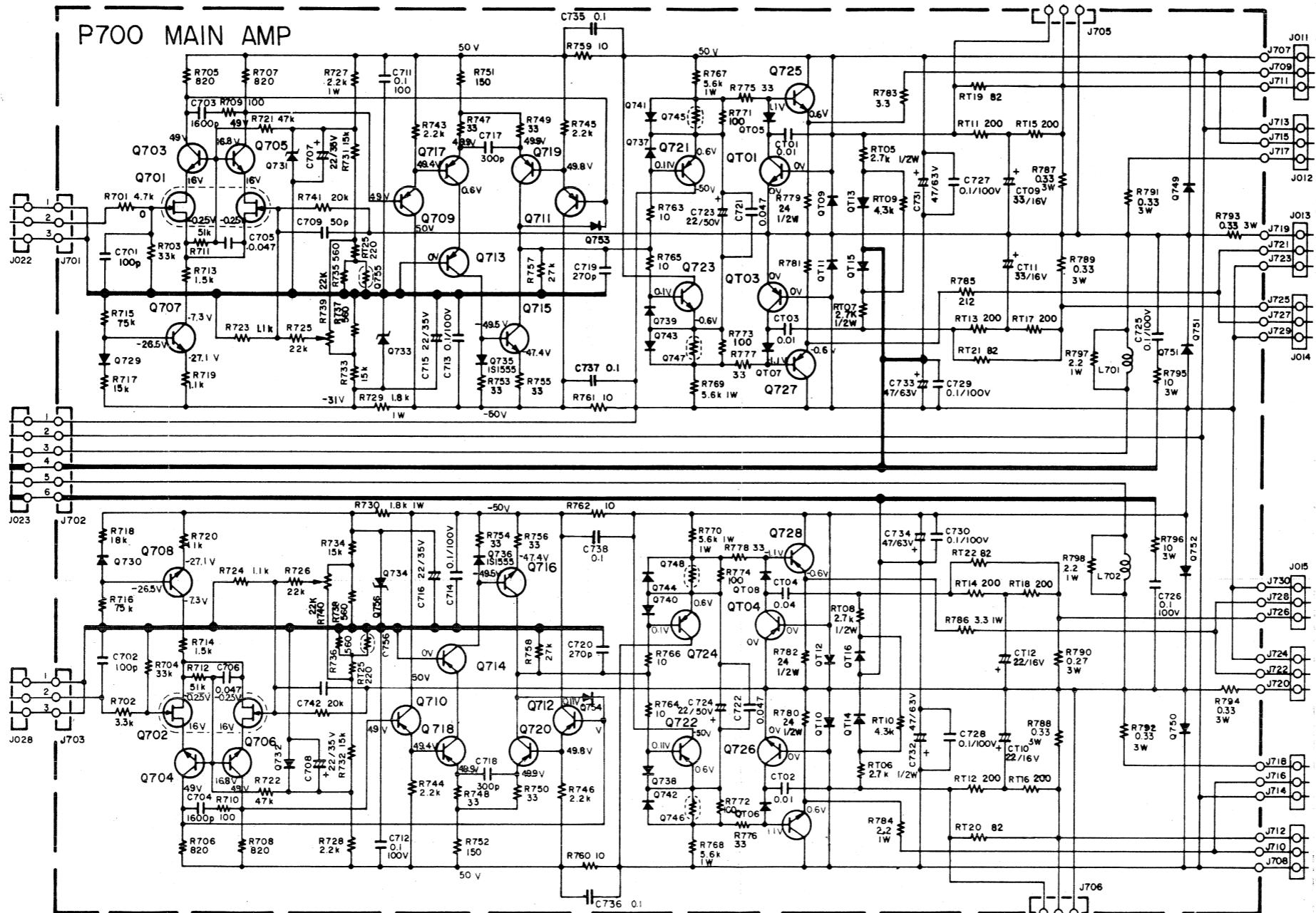
**5.4 Pre Amp. Assembly (PJ00)**  
**Schematic Diagram**



● Pre Amp. Assembly (PJ00) Component Locations

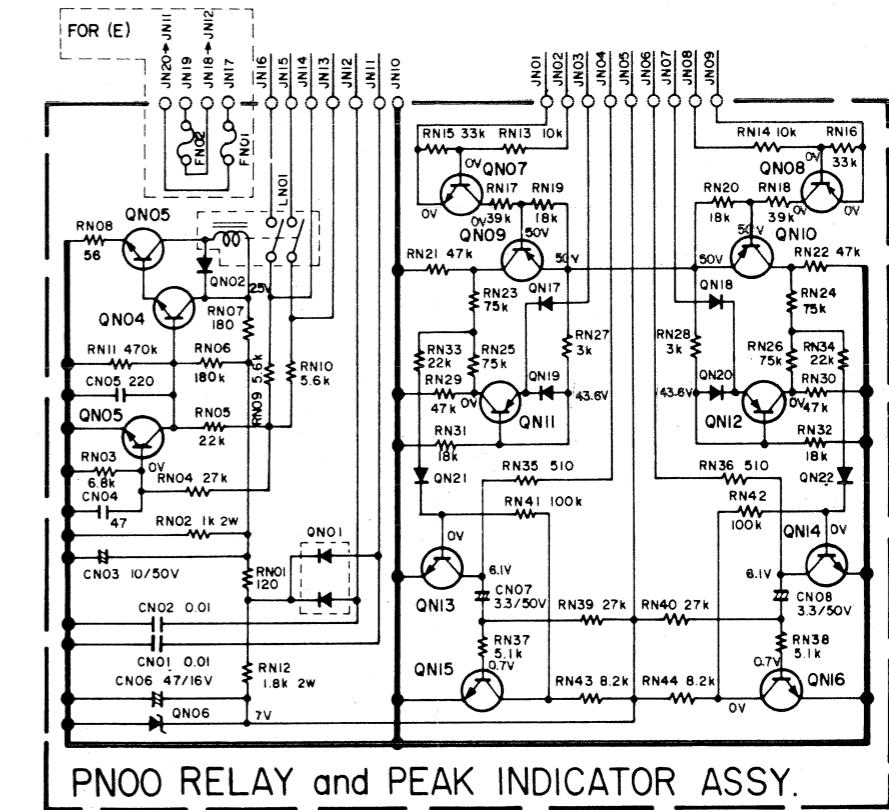
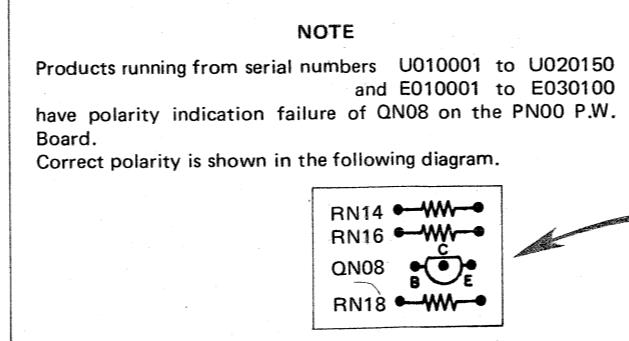
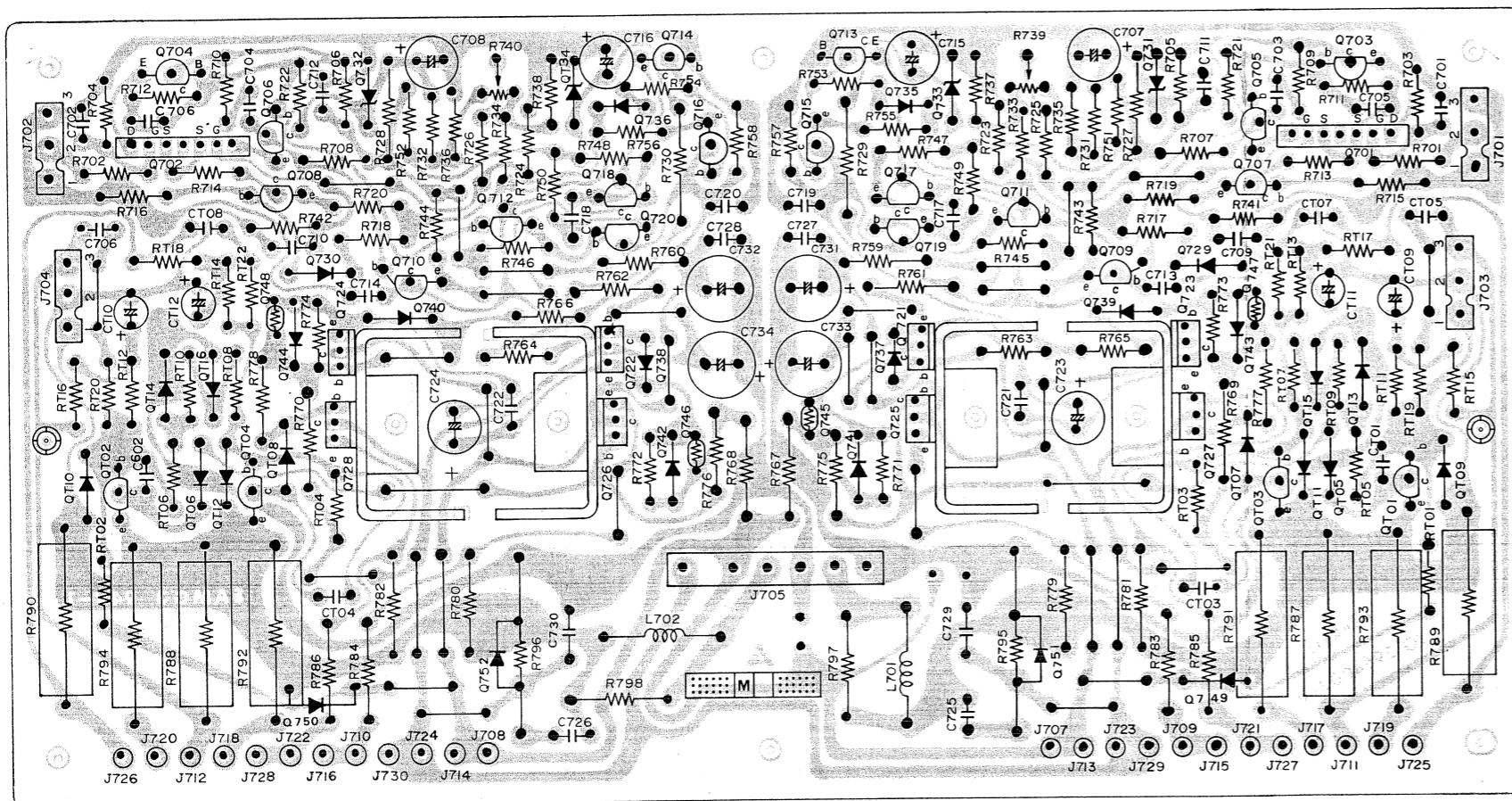


## 5.5 Main Amp. Assembly (P700) Schematic Diagram



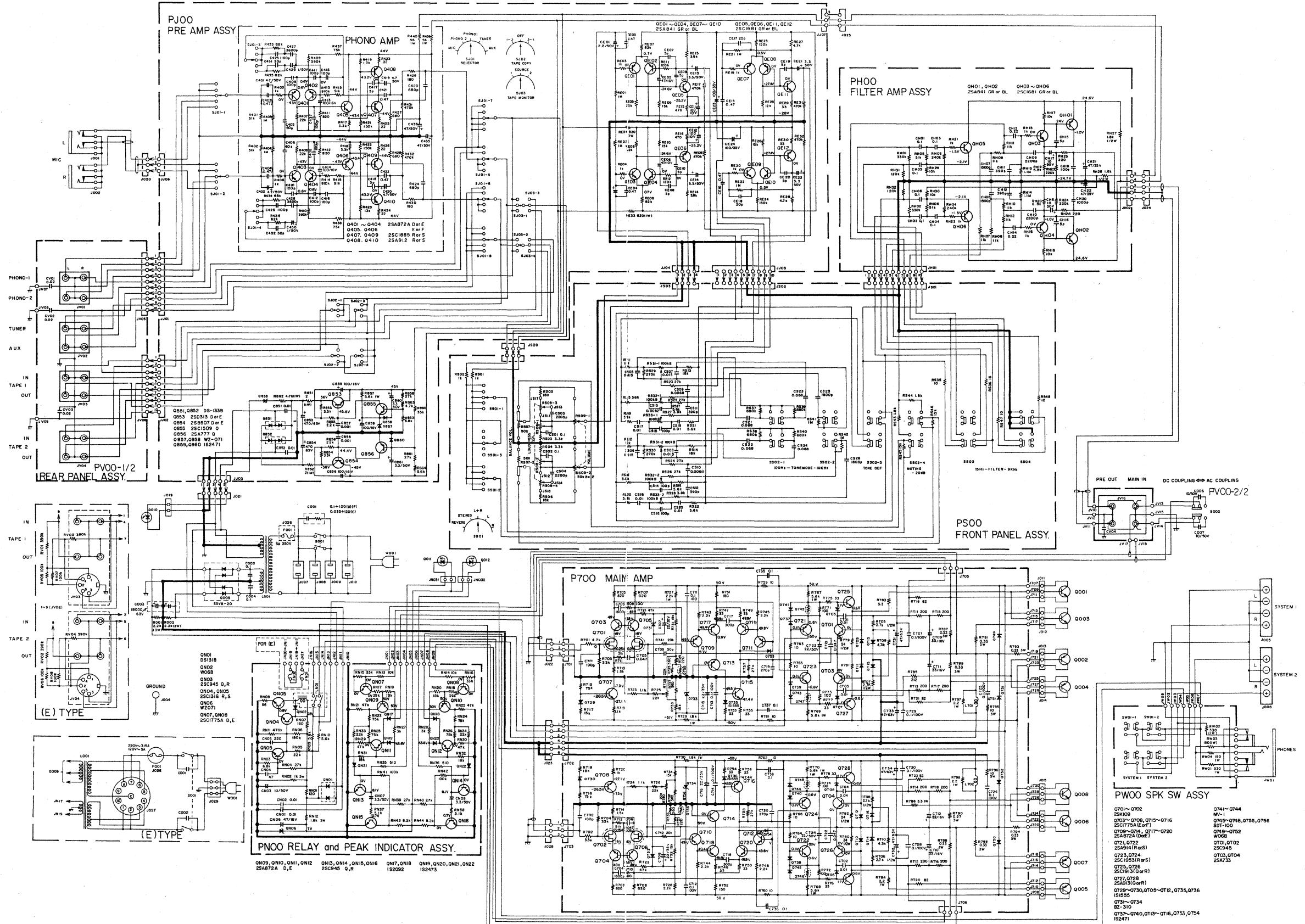
## 5.6 Relay Assembly (PN00) Schematic Diagram and Component Locations

### Main Amp. Assembly (P700) Component Locations



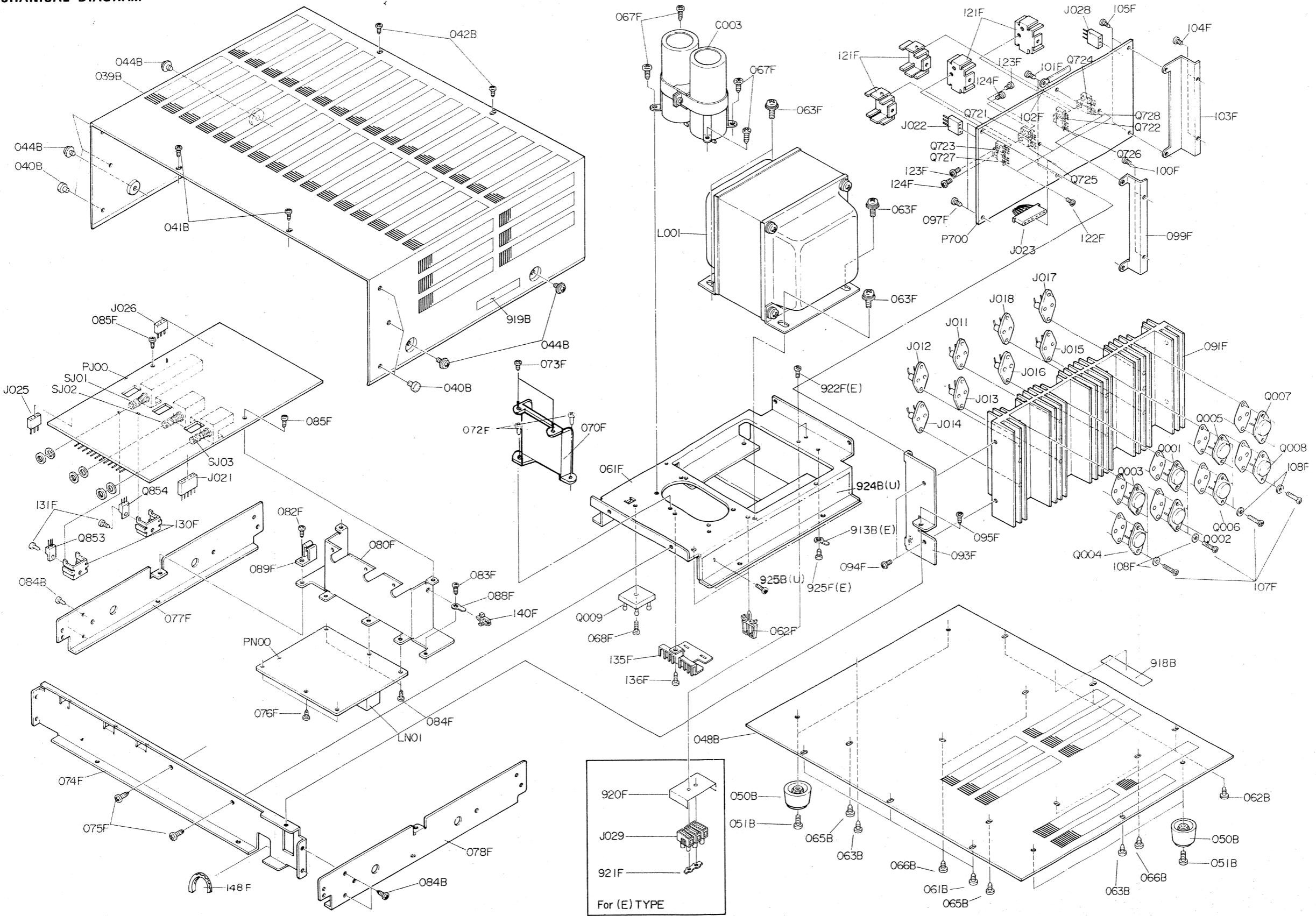
## 8. SCHEMATIC DIAGRAM

Model 118ODC



## **9. EXPLODED MECHANICAL DIAGRAM**

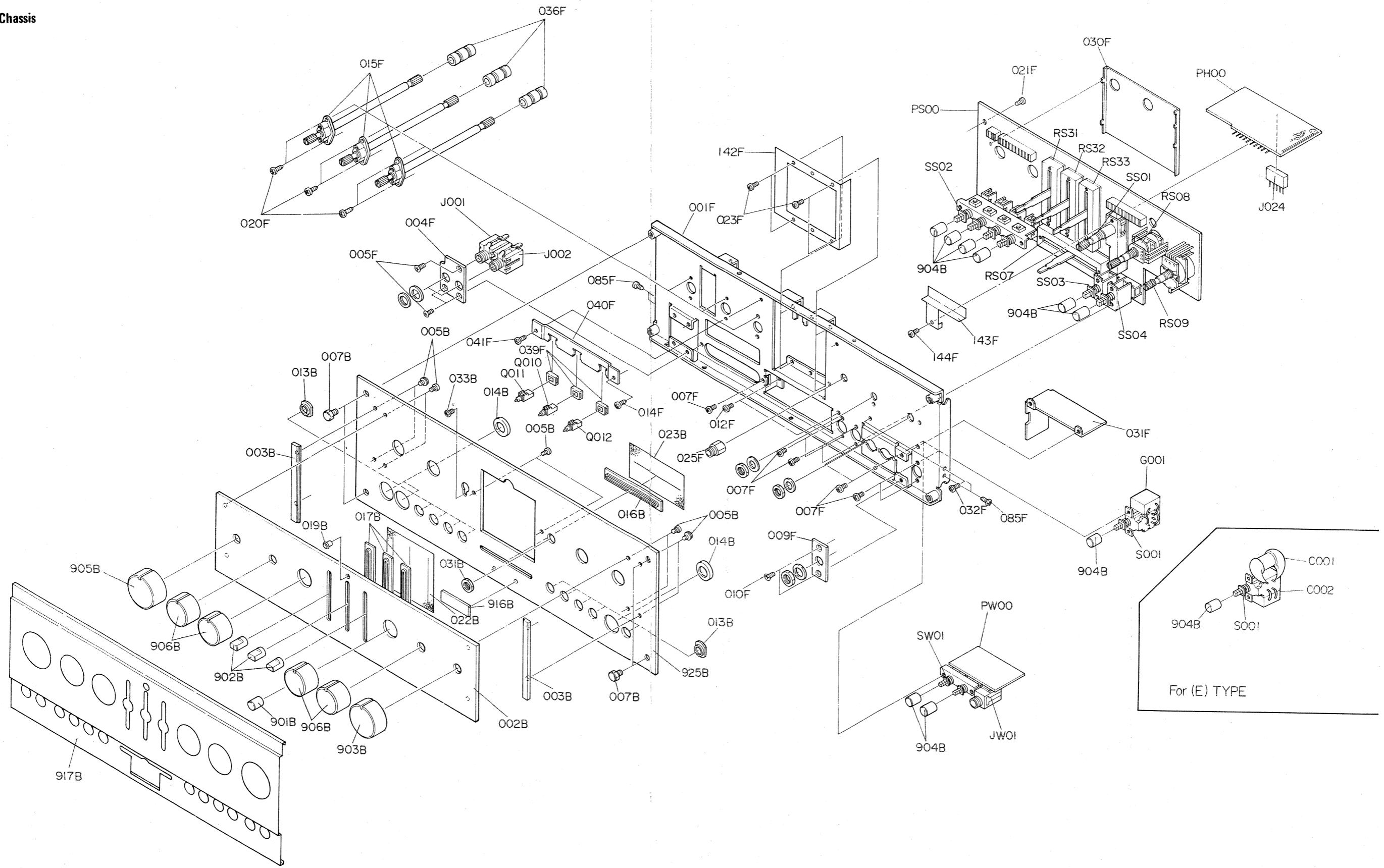
## 9.1 Cabinet



For (E) TY

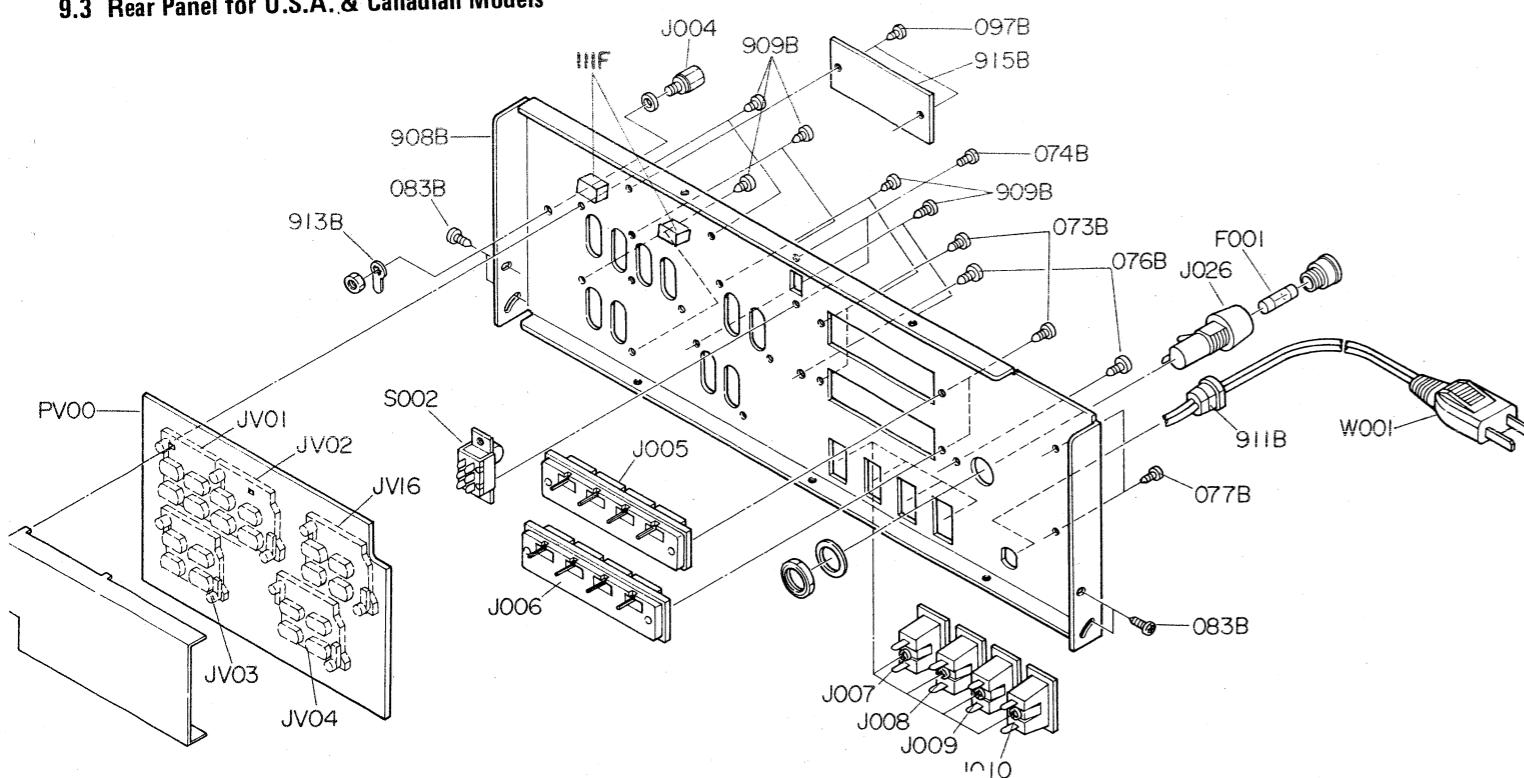
- (U) for U.S.A.
- (E) for Europe

## 9.2 Chassis

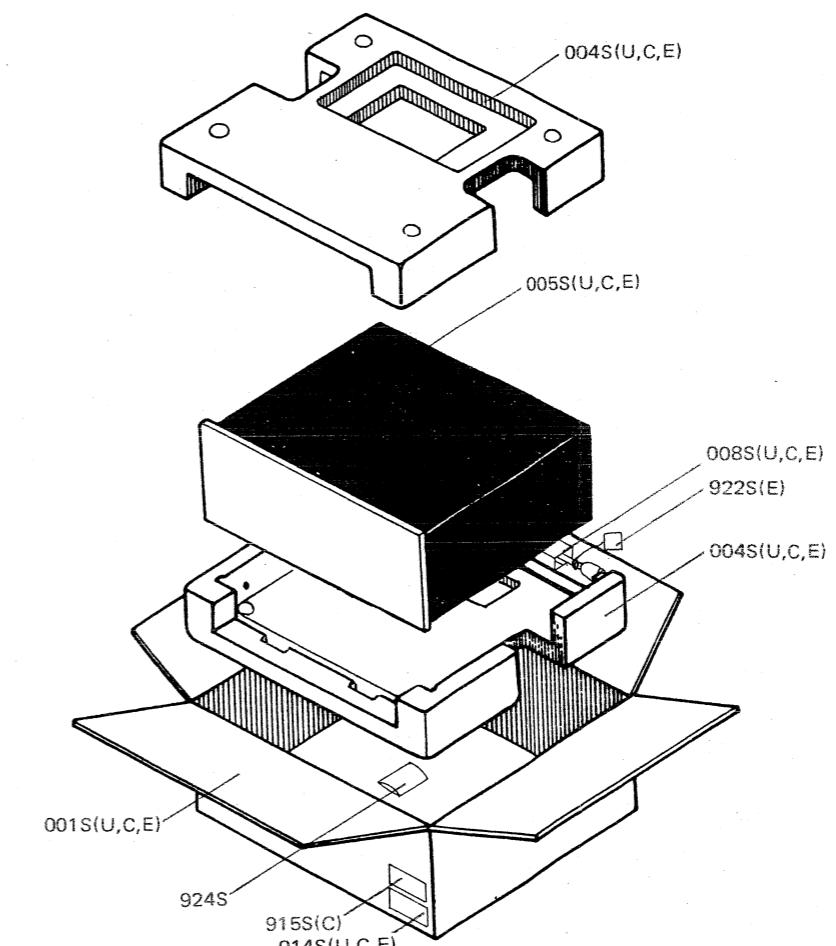
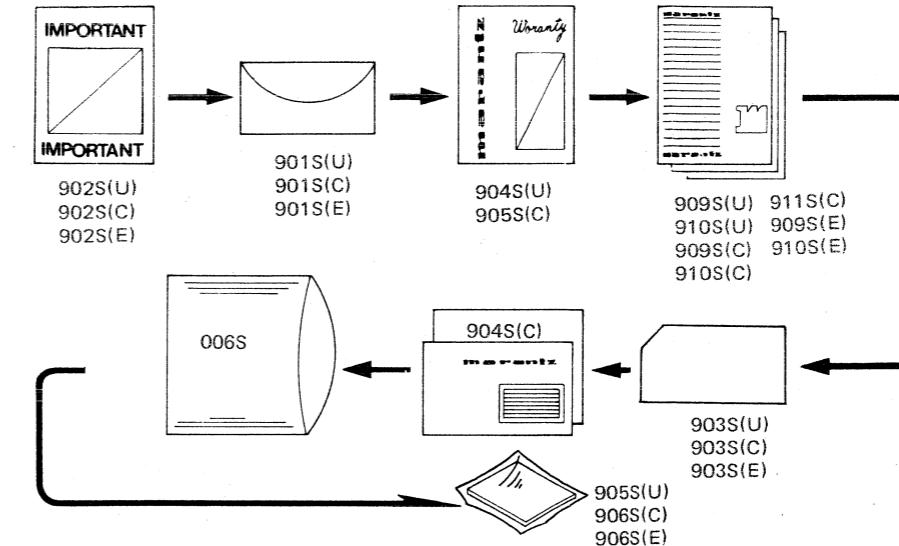
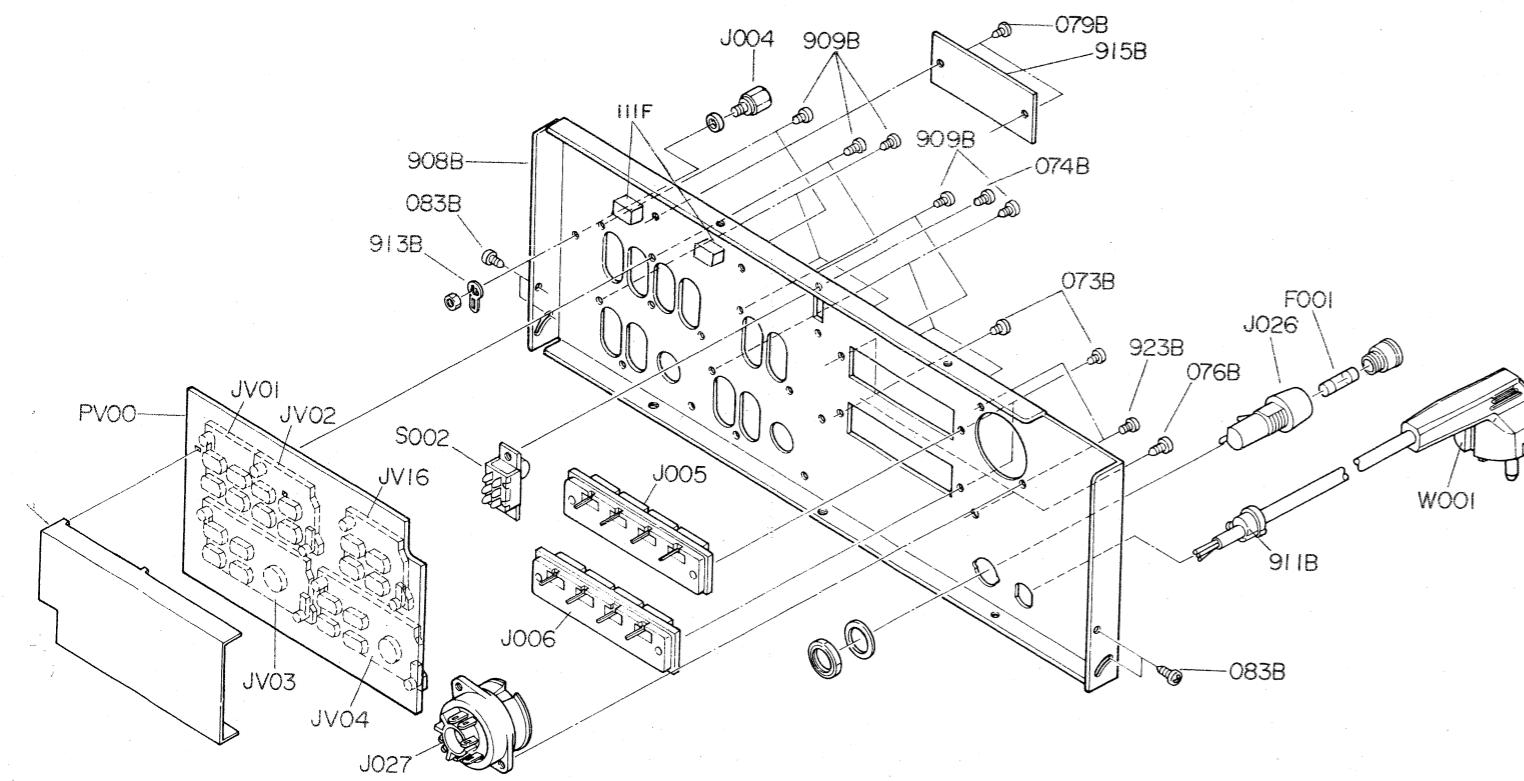


## 10. PACKING MATERIAL EXPLODED VIEW

### 9.3 Rear Panel for U.S.A. & Canadian Models



### 9.4 Rear Panel for European Model



• (U) for U.S.A.  
• (C) for Canada  
• (E) for Europe

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

## 11. PARTS LIST

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
A 1 1 1 2976063400					Front Panel Assembly
002B 1 1 1 2976063020					Escutcheon
003B 2 2 2 2965063050					Escutcheon
005B 10 10 10 51480306A9					F.Washer Screw, F3 x 6
013B 9 9 9 2978259012					Bushing
014B 3 3 3 2978259020					Bushing
016B 1 1 1 2926259040					Bushing
017B 3 3 3 2970259010					Bushing
019B 1 1 1 2979259022					Bushing
022B 1 1 1 2970303010					Mask
023B 1 1 1 2926303020					Mask
916B 1 1 1 2979251040					Badge
917B 1 1 1 2964053012					Cover
925B 1 1 1 2976063012					Escutcheon
PJ08 22 22 22 2933118020					Spacer
PJ09 4 4 4 2933118010					Spacer
PJ11 37 37 37 75061251PO					Jumper
PS11 12 12 12 75061251PO					Jumper
PW08 8 8 8 2933118020					Spacer
P007 4 4 4 3444118050					Spacer
P708 72 72 72 2933118020					Spacer
P711 26 26 26 75061001PO					Jumper
P712 6 6 6 75061501PO					Jumper
001F 1 1 1 2976160012					Bracket
001S 1 1 1 2976801010					Packing Case
004F 1 1 1 2970120010					Insulator
004S 2 2 2 2963809020					Cushion
005F 3 3 3 51340306B0					F.H. Tapped Screw, F3 x 6
005S 1 1 1 9014550180					Polyethylene Bag
006S 1 1 1 9013025010					Polyethylene Bag
007B 4 4 4 52017069J0					H. Head Bolt
007F 10 10 10 51100306A9					B.H.M., Screw, B3 x 6
008S 1 1 1 2864804010					Sleeve
009F 1 1 1 2970120020					Insulator
010F 2 2 2 51340306B0					F.H. Tapped Screw, F3 x 6
012F 2 2 2 51100306A9					B.H.M. Screw, B3 x 6
015F 3 3 3 2964112500					Shaft
020F 6 6 6 51280308B0					B.H. Tapped Screw, B3 x 8
021F 1 1 1 51280306B0					B.H. Tapped Screw, B3 x 6
023F 4 4 4 51100306A9					B.H.M. Screw, B3 x 6
025F 1 1 1 2970101010					Support
030F 1 1 1 2970109020					Shield
031B 1 1 1 53118179A0					Hexagon Nut
031F 1 1 1 2970109010					Shield
032F 2 2 2 51100306A9					B.H.M. Screw, B3 x 6
033B 1 1 1 51302608B0					P.H. Tapped Screw, P2.6 x 8
036F 3 3 3 2963125010					Joint
039B 1 1 1 2963257010					Lid

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
039F 3 3 3 2978259060					Bushing
040B 6 6 6 2979259030					Bushing
040F 1 1 1 2976160020					Bracket
041B 2 2 2 51280306U0					B.H. Tapped Screw, B3 x 6
041F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
042B 2 2 2 51280306U0					B.H. Tapped Screw, B3 x 6
044B 4 4 4 51480406S9					F. Washer Screw, F4 x 6
048B 1 1 1 2964257013					Lid
050B 4 4 4 2932057010					Leg
051B 4 4 4 51570410S0					P. Tapped Screw, P4 x 10
061B 3 3 3 51280410U0					B.H. Tapped Screw, B4 x 10
061F 1 1 1 2976105016					Chassis
062B 3 3 3 51280410U0					B.H. Tapped Screw, B4 x 10
062F 2 2 2 2886005030					Clamper
063B 2 2 2 51280410U0					B.H. Tapped Screw, B4 x 10
063F 4 4 4 51490612A9					L. Washer Screw, L6 x 12
065B 2 2 2 51280410U0					B.H. Tapped Screw, B4 x 10
066B 4 4 4 51280410U0					B.H. Tapped Screw, B4 x 10
067F 4 4 4 51280306B0					B.H. Tapped Screw, B3 x 6
068F 1 1 1 51280312B0					B.H. Tapped Screw, B3 x 12
070F 1 1 1 2964160020					Bracket
072F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
073B 4 4 4 51280308U0					B.H. Tapped Screw, B3 x 8
074B 2 2 2 51100306S9					B.H.M. Screw, B3 x 6
074F 1 1 1 2964126010					Stay
075F 2 2 2 51280408B0					B.H. Tapped Screw, B4 x 8
076B 2 2 2 51280408U0					B.H. Tapped Screw, B4 x 8
076F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
077B 2 2 2 51280308U0					B.H. Tapped Screw, B3 x 8
077F 1 1 1 2964105020					Chassis
078F 1 1 1 2964105030					Chassis
079B 2 2 2 51760306B0					OS Tapped Screw, O3 x 6
080F 1 1 1 2964160010					Bracket
081F 1 1 1 1382005030					Clamper
082F 1 1 1 51280306B0					B.H. Tapped Screw, B3 x 6
083B 4 4 4 51280306U0					B.H. Tapped Screw, B3 x 6
083F 1 1 1 51280306B0					B.H. Tapped Screw, B3 x 6
084B 4 4 4 51280306B0					B.H. Tapped Screw, B3 x 6
084F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
085B 4 4 4 51280306B0					B.H. Tapped Screw, B3 x 6
085F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
086F 1 1 1 51280306B0					B.H. Tapped Screw, B3 x 6
087F 1 1 1 1382005030					Clamper
088F 1 1 1 62030049W0					Lug
089F 1 1 1 2886005030					Clamper
091F 1 1 1 2976267010					Heatsink
093F 1 1 1 2964160070					Bracket
094F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
095F 1 1 1 51280306B0					B.H. Tapped Screw, B3 x 6
096F 1 1 1 51280306B0					B.H. Tapped Screw, B3 x 6
097F 2 2 2 51280306U0					B.H. Tapped Screw, B3 x 6
099F 1 1 1 2964160080					Bracket
100F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
101F 2 2 2 51280306U0					B.H. Tapped Screw, B3 x 6
102F 1 1 1 1382005030					Clamper
103F 1 1 1 2964160040					Bracket
104F 2 2 2 51280306B0					B.H. Tapped Screw, B3 x 6
105F 2 2 2 51280306U0					B.H. Tapped Screw, B3 x 6
107F 16 16 16 5110031689					B.H.M. Screw, B3 x 16
108F 16 16 16 54040302N0					Spring Washer
111F 2 2 2 2964118010					Spacer
121F 4 4 4 2212267020					Heatsink
122F 4 4 4 51100305S9					B.H.M. Screw, B3 x 5
123F 4 4 4 51280305U0					B.H. Tapped Screw, B3 x 5
124F 4 4 4 51280308U0					B.H. Tapped Screw, B3 x 8
130F 2 2 2 2963267020					Heatsink
131F 2 2 2 51280308B0					B.H. Tapped Screw, B3 x 8
134F 1 1 1 2964109020					Shield
135F 1 1 1 2964123010					Contactor
136F 1 1 1 51290308B0					Tapped Screw, 3 x 8

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION			REF. DESIG.	Q'TY			PART NO.	DESCRIPTION			
	U	C	E						U	C	E					
RE01	1	1	1	RT05105140	Resistor,	1MΩ	±5%	1/4W	JH02	1	1	1	YP06001050	Plug,	5P	
RE02	1	1	1	RT05105140	Resistor,	1MΩ	±5%	1/4W	PH00	1	1	1	YK29640310	PH00 FILTER AMP BOARD		
RE03	1	1	1	RT05102140	Resistor,	1kΩ	±5%	1/4W		1	1	1	ZZ29640310	P.W. Board		
RE04	1	1	1	RT05102140	Resistor,	1kΩ	±5%	1/4W					P.W. Board Assembly			
RE05	1	1	1	RT05223140	Resistor,	22kΩ	±5%	1/4W	QH01	1	1	1	HT108412A0	Transistor,	2SA841 (GR or BL)	
RE06	1	1	1	RT05223140	Resistor,	22kΩ	±5%	1/4W	QH02	1	1	1	HT108412A0	Transistor,	2SA841 (GR or BL)	
RE07	1	1	1	RT05823140	Resistor,	82kΩ	±5%	1/4W	QH03	1	1	1	HT316812A0	Transistor,	2SC1681(GR or BL)	
RE08	1	1	1	RT05823140	Resistor,	82kΩ	±5%	1/4W	QH04	1	1	1	HT316812A0	Transistor,	2SC1681(GR or BL)	
RE09	1	1	1	RT05153140	Resistor,	15kΩ	±5%	1/4W	QH05	1	1	1	HT316812A0	Transistor,	2SC1681(GR or BL)	
RE10	1	1	1	RT05153140	Resistor,	15kΩ	±5%	1/4W	QH06	1	1	1	HT316812A0	Transistor,	2SC1681(GR or BL)	
RE11	1	1	1	RT05124140	Resistor,	120kΩ	±5%	1/4W	RH01	1	1	1	RT05334140	Resistor,	330kΩ ±5% 1/4W	
RE12	1	1	1	RT05124140	Resistor,	120kΩ	±5%	1/4W	RH02	1	1	1	RT05334140	Resistor,	330kΩ ±5% 1/4W	
RE13	1	1	1	RT05392140	Resistor,	3.9kΩ	±5%	1/4W	RH03	1	1	1	RT05244140	Resistor,	240kΩ ±5% 1/4W	
RE14	1	1	1	RT05392140	Resistor,	3.9kΩ	±5%	1/4W	RH04	1	1	1	RT05244140	Resistor,	240kΩ ±5% 1/4W	
RE15	1	1	1	RT05471140	Resistor,	470Ω	±5%	1/4W	RH05	1	1	1	RT05513140	Resistor,	51kΩ ±5% 1/4W	
RE16	1	1	1	RT05471140	Resistor,	470Ω	±5%	1/4W	RH06	1	1	1	RT05513140	Resistor,	51kΩ ±5% 1/4W	
RE17	1	1	1	RT05474140	Resistor,	470kΩ	±5%	1/4W	RH07	1	1	1	RT05113140	Resistor,	11kΩ ±5% 1/4W	
RE18	1	1	1	RT05474140	Resistor,	470kΩ	±5%	1/4W	RH08	1	1	1	RT05113140	Resistor,	11kΩ ±5% 1/4W	
RE19	1	1	1	RT05102140	Resistor,	1kΩ	±5%	1/4W	RH09	1	1	1	RT05113140	Resistor,	11kΩ ±5% 1/4W	
RE20	1	1	1	RT05102140	Resistor,	1kΩ	±5%	1/4W	RH10	1	1	1	RT05113140	Resistor,	11kΩ ±5% 1/4W	
RE21	1	1	1	RT05105140	Resistor,	1MΩ	±5%	1/4W	RH11	1	1	1	RT05113140	Resistor,	11kΩ ±5% 1/4W	
RE22	1	1	1	RT05105140	Resistor,	1MΩ	±5%	1/4W	RH12	1	1	1	RT05113140	Resistor,	11kΩ ±5% 1/4W	
RE23	1	1	1	RT05154140	Resistor,	150kΩ	±5%	1/4W	RH13	1	1	1	RT05115140	Resistor,	1.1MΩ ±5% 1/4W	
RE24	1	1	1	RT05154140	Resistor,	150kΩ	±5%	1/4W	RH14	1	1	1	RT05115140	Resistor,	1.1MΩ ±5% 1/4W	
RE25	1	1	1	RT05123140	Resistor,	12kΩ	±5%	1/4W	RH15	1	1	1	RT05102140	Resistor,	1kΩ ±5% 1/4W	
RE26	1	1	1	RT05123140	Resistor,	12kΩ	±5%	1/4W	RH16	1	1	1	RT05102140	Resistor,	1kΩ ±5% 1/4W	
RE27	1	1	1	RT05472140	Resistor,	4.7kΩ	±5%	1/4W	RH17	1	1	1	RT05103140	Resistor,	10kΩ ±5% 1/4W	
RE28	1	1	1	RT05472140	Resistor,	4.7kΩ	±5%	1/4W	RH18	1	1	1	RT05103140	Resistor,	10kΩ ±5% 1/4W	
RE29	1	1	1	RT05330140	Resistor,	33Ω	±5%	1/4W	RH19	1	1	1	RT05682140	Resistor,	6.8kΩ ±5% 1/4W	
RE30	1	1	1	RT05330140	Resistor,	33Ω	±5%	1/4W	RH20	1	1	1	RT05682140	Resistor,	6.8kΩ ±5% 1/4W	
RE31	1	1	1	RT05474140	Resistor,	470kΩ	±5%	1/4W	RH21	1	1	1	RT05102140	Resistor,	1kΩ ±5% 1/4W	
RE32	1	1	1	RT05474140	Resistor,	470kΩ	±5%	1/4W	RH22	1	1	1	RT05102140	Resistor,	1kΩ ±5% 1/4W	
RE33	1	1	1	GJ05821010	Resistor,	820Ω	±5%	1W	RH23	1	1	1	RT05224140	Resistor,	220kΩ ±5% 1/4W	
RE34	1	1	1	GJ05821010	Resistor,	820Ω	±5%	1W	RH24	1	1	1	RT05224140	Resistor,	220kΩ ±5% 1/4W	
CH01	1	1	1	DF15104010	Film Cap.,	0.1μF	±5%	50V	RH25	1	1	1	RT05221140	Resistor,	220Ω ±5% 1/4W	
CH02	1	1	1	DF15104010	Film Cap.,	0.1μF	±5%	50V	RH26	1	1	1	RT05221140	Resistor,	220Ω ±5% 1/4W	
CH03	1	1	1	DF15104010	Film Cap.,	0.1μF	±5%	50V	RH27	1	1	1	GF05182120	Resistor,	1.8kΩ ±5% 1/4W	
CH04	1	1	1	DF15104010	Film Cap.,	0.1μF	±5%	50V	RH28	1	1	1	GF05182120	Resistor,	1.8kΩ ±5% 1/4W	
CH05	1	1	1	DF15104010	Film Cap.,	0.1μF	±5%	50V	RH29	1	1	1	RT05103140	Resistor,	10kΩ ±5% 1/4W	
CH06	1	1	1	DF15104010	Film Cap.,	0.1μF	±5%	50V	RH30	1	1	1	RT05103140	Resistor,	10kΩ ±5% 1/4W	
CH07	1	1	1	DF15152010	Film Cap.,	1500pF	±5%	50V	RH31	1	1	1	RT05124140	Resistor,	120kΩ ±5% 1/4W	
CH08	1	1	1	DF15152010	Film Cap.,	1500pF	±5%	50V	RH32	1	1	1	RT05124140	Resistor,	120kΩ ±5% 1/4W	
CH09	1	1	1	DF15222010	Film Cap.,	2200pF	±5%	50V	JJ01	1	1	1	YP06000400	Plug,	10P, AMP	
CH10	1	1	1	DF15222010	Film Cap.,	2200pF	±5%	50V	JJ02	1	1	1	YP06000400	Plug,	10P, AMP	
CH11	1	1	1	DF65391010	Film Cap.,	390pF	±5%	50V	JJ03	1	1	1	YP06001050	Plug,	5P	
CH12	1	1	1	DF65391010	Film Cap.,	390pF	±5%	50V	JJ04	1	1	1	YP06000340	Plug,	4P, AMP	
CH13	1	1	1	DF17224010	Film Cap.,	0.22μF	±20%	50V	JJ05	1	1	1	YP06000400	Plug,	10P, AMP	
CH14	1	1	1	DF17224010	Film Cap.,	0.22μF	±20%	50V	JJ06	1	1	1	YP06001040	Plug,	3P	
CH15	1	1	1	DD11050010	Ceramic Cap.,	5pF	±0.5pF	50V	JJ07	1	1	1	YP06001040	Plug,	3P	
CH16	1	1	1	DD11050010	Ceramic Cap.,	5pF	±0.5pF	50V								
CH17	1	1	1	EE10605040	Electrolytic Cap.,	10μF		50V								
CH18	1	1	1	EE10605040	Electrolytic Cap.,	10μF		50V								
CH19	1	1	1	DD15101020	Ceramic Cap.,	100pF	±5%	50V	PJ00	1	1	1	YG29640012	P.W. Board		
CH20	1	1	1	DD15101020	Ceramic Cap.,	100pF	±5%	50V		1	1	1	ZZ29640010	P.W. Board Assembly		
CH21	1	1	1	EA47603590	Electrolytic Cap.,	47μF		35V	SJ01	1	1	1	SR08050360	Rotary Switch, Selector		
CH22	1	1	1	EA47603590	Electrolytic Cap.,	47μF		35V	SJ02	1	1	1	SR04030160	Rotary Switch, Tape Copy		
JH01	1	1	1	YP06000400	Plug,	10P, AMP										

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY U C E			PART NO.	DESCRIPTION	
SJ03	1	1	1	SR04030160	Rotary Switch, Tape Monitor	
CN01	1	1	1	DK18103510	Ceramic Cap., 0.01μF	500V
CN02	1	1	1	DK18103510	Ceramic Cap., 0.01μF	500V
CN03	1	1	1	EA10605090	Electrolytic Cap., 10μF	50V
CN04	1	1	1	EA47601690	Electrolytic Cap., 47μF	16V
CN05	1	1	1	EA22701690	Electrolytic Cap., 220μF	16V
CN06	1	1	1	EA47601690	Electrolytic Cap., 47μF	16V
CN07	1	1	1	EA33505090	Electrolytic Cap., 3.3μF	50V
CN08	1	1	1	EA33505090	Electrolytic Cap., 3.3μF	50V
JN01	20	20	20	YP10001130	Plug	
JN20						
LN01	1	1	1	LY40240050	Relay	
PN00	1	1	1	YK29760210	PN00 RELAY BOARD	
	1	1	1	ZZ29760210	P.W. Board	
					P.W. Board assembly	
QN01	1	1	1	HD20011030	Diode,	DS131B
QN02	1	1	1	HD20005010	Diode,	W06B
QN03	1	1	1	HT309452A0	Transistor,	2SC945 Q, R
QN04	1	1	1	HT313182R0	Transistor,	2SC1318 R, S
QN05	1	1	1	HT313182R0	Transistor,	2SC1318 R, S
QN06	1	1	1	HD30023090	Zener Diode,	WZ071 7V
QN07	1	1	1	HT317752D0	Transistor,	2SC1775A D, E
QN08	1	1	1	HT317752D0	Transistor,	2SC1775A D, E
QN09	1	1	1	HT108722D0	Transistor,	2SA872A D, E
QN10	1	1	1	HT108722D0	Transistor,	2SA872A D, E
QN11	1	1	1	HT108722D0	Transistor,	2SA872A D, E
QN12	1	1	1	HT108722D0	Transistor,	2SA872A D, E
QN13	1	1	1	HT309452A0	Transistor,	2SC945 Q, R
QN14	1	1	1	HT309452A0	Transistor,	2SC945 Q, R
QN15	1	1	1	HT309452A0	Transistor,	2SC945 Q, R
QN16	1	1	1	HT309452A0	Transistor,	2SC945 Q, R
QN17	1	1	1	HD20018050	Diode,	1S2092
QN18	1	1	1	HD20018050	Diode,	1S2092
QN19	1	1	1	HD20001210	Diode,	1S2473
QN20	1	1	1	HD20001210	Diode,	1S2473
QN21	1	1	1	HD20001210	Diode,	1S2473
QN22	1	1	1	HD20001210	Diode,	1S2473
RN01	1	1	1	GJ05121010	Resistor,	120Ω ±5% 1W
RN02	1	1	1	GJ05102020	Resistor,	1kΩ ±5% 2W
RN03	1	1	1	GD05682140	Resistor,	6.8kΩ ±5% 1/4W
RN04	1	1	1	GD05273140	Resistor,	27kΩ ±5% 1/4W
RN05	1	1	1	GD05223140	Resistor,	22kΩ ±5% 1/4W
RN06	1	1	1	GD05164140	Resistor,	160kΩ ±5% 1/4W
RN07	1	1	1	GJ05181010	Resistor,	180Ω ±5% 1W
RN08	1	1	1	GD05560140	Resistor,	56Ω ±5% 1/4W
RN09	1	1	1	GU05562120	Resistor,	5.6kΩ ±5% 1/4W
RN10	1	1	1	GU05562120	Resistor,	5.6kΩ ±5% 1/4W
RN11	1	1	1	GD05474140	Resistor,	470kΩ ±5% 1/4W
RN12	1	1	1	GJ05182010	Resistor,	1.8kΩ ±5% 1W
RN13	1	1	1	GD05103140	Resistor,	10kΩ ±5% 1/4W
RN14	1	1	1	GD05103140	Resistor,	10kΩ ±5% 1/4W
RN15	1	1	1	GD05333140	Resistor,	33kΩ ±5% 1/4W
RN16	1	1	1	GD05333140	Resistor,	33kΩ ±5% 1/4W
RN17	1	1	1	GD05393140	Resistor,	39kΩ ±5% 1/4W
RN18	1	1	1	GD05393140	Resistor,	39kΩ ±5% 1/4W

REF. DESIG.	Q'TY U C E			PART NO.	DESCRIPTION	
RN19	1	1	1	GD05183140	Resistor,	18kΩ ±5% 1/4W
RN20	1	1	1	GD05183140	Resistor,	18kΩ ±5% 1/4W
RN21	1	1	1	GD05473140	Resistor,	47kΩ ±5% 1/4W
RN22	1	1	1	GD05473140	Resistor,	47kΩ ±5% 1/4W
RN23	1	1	1	GD05353140	Resistor,	35kΩ ±5% 1/4W
RN24	1	1	1	GD05353140	Resistor,	35kΩ ±5% 1/4W
RN25	1	1	1	GD05353140	Resistor,	35kΩ ±5% 1/4W
RN26	1	1	1	GD05353140	Resistor,	35kΩ ±5% 1/4W
RN27	1	1	1	GD05302140	Resistor,	3kΩ ±5% 1/4W
RN28	1	1	1	GD05302140	Resistor,	3kΩ ±5% 1/4W
RN29	1	1	1	GD05473140	Resistor,	47kΩ ±5% 1/4W
RN30	1	1	1	GD05473140	Resistor,	47kΩ ±5% 1/4W
RN31	1	1	1	GD05183140	Resistor,	18kΩ ±5% 1/4W
RN32	1	1	1	GD05183140	Resistor,	18kΩ ±5% 1/4W
RN33	1	1	1	GD05223140	Resistor,	22kΩ ±5% 1/4W
RN34	1	1	1	GD05223140	Resistor,	22kΩ ±5% 1/4W
RN35	1	1	1	GD05511140	Resistor,	510Ω ±5% 1/4W
RN36	1	1	1	GD05511140	Resistor,	510Ω ±5% 1/4W
RN37	1	1	1	GD05512140	Resistor,	5.1kΩ ±5% 1/4W
RN38	1	1	1	GD05512140	Resistor,	5.1kΩ ±5% 1/4W
RN39	1	1	1	GD05273140	Resistor,	27kΩ ±5% 1/4W
RN40	1	1	1	GD05273140	Resistor,	27kΩ ±5% 1/4W
RN41	1	1	1	GD05104140	Resistor,	100kΩ ±5% 1/4W
RN42	1	1	1	GD05104140	Resistor,	100kΩ ±5% 1/4W
RN43	1	1	1	GD05822140	Resistor,	8.2kΩ ±5% 1/4W
RN44	1	1	1	GD05822140	Resistor,	8.2kΩ ±5% 1/4W
FP01	1			FS10160800	Fuse,	SEMKO 1.6A
FP02	1			FS10160800	Fuse,	SEMKO 1.6A
JP01	1			YJ08000200	Jack,	Fuse Holder, PWB Type
JP02	1			YJ08000200	Jack,	Fuse Holder, PWB Type
JP03	1			YJ08000200	Jack,	Fuse Holder, PWB Type
JP04	1			YJ08000200	Jack,	Fuse Holder, PWB Type
CS01	1	1	1	DF15104010	Film Cap.,	0.1μF ±5% 50V
CS02	1	1	1	DF15104010	Film Cap.,	0.1μF ±5% 50V
CS03	1	1	1	DF15222010	Film Cap.,	2200pF ±5% 50V
CS04	1	1	1	DF15222010	Film Cap.,	2200pF ±5% 50V
CS05	1	1	1	DF15153010	Film Cap.,	0.015μF ±5% 50V
CS06	1	1	1	DF15153010	Film Cap.,	0.015μF ±5% 50V
CS07	1	1	1	DF15153010	Film Cap.,	0.015μF ±5% 50V
CS08	1	1	1	DF15153010	Film Cap.,	0.015μF ±5% 50V
CS09	1	1	1	DF15682010	Film Cap.,	6800pF ±5% 50V
CS10	1	1	1	DF15682010	Film Cap.,	6800pF ±5% 50V
CS11	1	1	1	DF65391010	Film Cap.,	390pF ±5% 50V
CS12	1	1	1	DF65391010	Film Cap.,	390pF ±5% 50V
CS13	1	1	1	DF15822010	Film Cap.,	8200pF ±5% 50V
CS14	1	1	1	DF15822010	Film Cap.,	8200pF ±5% 50V
CS15	1	1	1	DD15101020	Ceramic Cap.,	100pF ±5% 50V
CS16	1	1	1	DD15101020	Ceramic Cap.,	100pF ±5% 50V
CS17	1	1	1	DF15103010	Film Cap.,	0.01μF ±5% 50V
CS18	1	1	1	DF15103010	Film Cap.,	0.01μF ±5% 50V
CS19	1	1	1	DF15103010	Film Cap.,	0.01μF ±5% 50V
CS20	1	1	1	DF15103010	Film Cap.,	0.01μF ±5% 50V
CS21	1	1	1	DF15683010	Film Cap.,	0.068μF ±5% 50V
CS22	1	1	1	DF15683010	Film Cap.,	0.068μF ±5% 50V
CS23	1	1	1	DF15683010	Film Cap.,	0.068μF ±5% 50V
CS24	1	1	1	DF15683010	Film Cap.,	0.068μF ±5% 50V
CS25	1	1	1	DF15182010	Film Cap.,	1800pF ±5% 50V

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY U C E			PART NO.	DESCRIPTION
CS26	1	1	1	DF15182010	Film Cap., 1800pF ±5% 50V
JS01	1	1	1	YJ06000400	Jack, 10P Connector (AMP)
JS02	1	1	1	YJ06000400	Jack, 10P Connector (AMP)
JS03	1	1	1	YJ06000340	Jack, 4P Connector (AMP)
JS05	1	14	14	YP10001130	Plug
JS18					
PS00 FRONT PANEL BOARD					
PS00	1	1	1	YD29702020	P.W. Board, Front Panel
	1	1	1	ZZ29762020	P.W. Board Assembly
RS01	1	1	1	RT05102140	Resistor, 1kΩ ±5% 1/4W
RS02	1	1	1	RT05102140	Resistor, 1kΩ ±5% 1/4W
RS03	1	1	1	RT05332140	Resistor, 3.3kΩ ±5% 1/4W
RS04	1	1	1	RT05332140	Resistor, 3.3kΩ ±5% 1/4W
RS05	1	1	1	RT05183140	Resistor, 18kΩ ±5% 1/4W
RS06	1	1	1	RT05183140	Resistor, 18kΩ ±5% 1/4W
RS07	1	1	1	RS05030320	Variable Resistor, 50kΩx2
RS08	1	1	1	RG05030060	Variable Resistor, 50kΩAx2
RS09	1	1	1	RM05030720	Variable Resistor, 50kΩBx2
RS11	1	1	1	RT05183140	Resistor, 18kΩ ±5% 1/4W
RS12	1	1	1	RT05183140	Resistor, 18kΩ ±5% 1/4W
RS13	1	1	1	RT05183140	Resistor, 18kΩ ±5% 1/4W
RS14	1	1	1	RT05183140	Resistor, 18kΩ ±5% 1/4W
RS15	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS16	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS17	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS18	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS19	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS20	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS21	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS22	1	1	1	RT05562140	Resistor, 5.6kΩ ±5% 1/4W
RS23	1	1	1	RT05273140	Resistor, 27kΩ ±5% 1/4W
RS24	1	1	1	RT05273140	Resistor, 27kΩ ±5% 1/4W
RS25	1	1	1	RT05273140	Resistor, 27kΩ ±5% 1/4W
RS26	1	1	1	RT05273140	Resistor, 27kΩ ±5% 1/4W
RS27	1	1	1	RT05392140	Resistor, 3.9kΩ ±5% 1/4W
RS28	1	1	1	RT05392140	Resistor, 3.9kΩ ±5% 1/4W
RS29	1	1	1	RT05274140	Resistor, 270kΩ ±5% 1/4W
RS30	1	1	1	RT05274140	Resistor, 270kΩ ±5% 1/4W
RS31	1	1	1	RS01040040	Variable Resistor, 100kΩBx2
RS32	1	1	1	RS01040040	Variable Resistor, 100kΩBx2
RS33	1	1	1	RS01040040	Variable Resistor, 100kΩBx2
RS35	1	1	1	RT05100140	Resistor, 10Ω ±5% 1/4W
RS36	1	1	1	RT05100140	Resistor, 10Ω ±5% 1/4W
RS37	1	1	1	RT05684140	Resistor, 680kΩ ±5% 1/4W
RS38	1	1	1	RT05684140	Resistor, 680kΩ ±5% 1/4W
RS39	1	1	1	RT05684140	Resistor, 680kΩ ±5% 1/4W
RS40	1	1	1	RT05684140	Resistor, 680kΩ ±5% 1/4W
RS41	1	1	1	RT05105140	Resistor, 1MΩ ±5% 1/4W
RS42	1	1	1	RT05105140	Resistor, 1MΩ ±5% 1/4W
RS43	1	1	1	RT05182140	Resistor, 1.8kΩ ±5% 1/4W
RS44	1	1	1	RT05182140	Resistor, 1.8kΩ ±5% 1/4W
RS45	1	1	1	RT05153140	Resistor, 15kΩ ±5% 1/4W
RS46	1	1	1	RT05153140	Resistor, 15kΩ ±5% 1/4W
RS47	1	1	1	RT05100140	Resistor, 10Ω ±5% 1/4W
RS48	1	1	1	RT05100140	Resistor, 10Ω ±5% 1/4W

REF. DESIG.	Q'TY U C E			PART NO.	DESCRIPTION
SS01	1	1	1	SR04050100	Rotary Switch, 4 Circuit 5 Position
SS02	1	1	1	SP04040170	Push Switch, 4 Circuit 4 Button
SS03	1	1	1	SP04010210	Push Switch, 4 Circuit 1 Button
SS04	1	1	1	SP04010210	Push Switch, 4 Circuit 1 Button
CT01	1	1	1	DF16103010	Film Cap., 0.01μF ±10% 50V
CT02	1	1	1	DF16103010	Film Cap., 0.01μF ±10% 50V
CT03	1	1	1	DF16103010	Film Cap., 0.01μF ±10% 50V
CT04	1	1	1	DF16103010	Film Cap., 0.01μF ±10% 50V
CT09	1	1	1	EA22601690	Electrolytic Cap., 22μF 16V
CT10	1	1	1	EA22601690	Electrolytic Cap., 22μF 16V
CT11	1	1	1	EA22601690	Electrolytic Cap., 22μF 16V
CT12	1	1	1	EA22601690	Electrolytic Cap., 22μF 16V
QT01	1	1	1	HT309452A0	Transistor, 2SC945 (Q or R)
QT02	1	1	1	HT309452A0	Transistor, 2SC945 (Q or R)
QT03	1	1	1	HT107332A0	Transistor, 2SA733 (Q or R)
QT04	1	1	1	HT107332A0	Transistor, 2SA733 (Q or R)
QT05	1	1	1	HD20011050	Diode, 1S1555
QT06	1	1	1	HD20011050	Diode, 1S1555
QT07	1	1	1	HD20011050	Diode, 1S1555
QT08	1	1	1	HD20011050	Diode, 1S1555
QT09	1	1	1	HD20011050	Diode, 1S1555
QT10	1	1	1	HD20011050	Diode, 1S1555
QT11	1	1	1	HD20011050	Diode, 1S1555
QT12	1	1	1	HD20011050	Diode, 1S1555
QT13	1	1	1	HD20003210	Diode, 1S2471
QT14	1	1	1	HD20003210	Diode, 1S2471
QT15	1	1	1	HD20003210	Diode, 1S2471
QT16	1	1	1	HD20003210	Diode, 1S2471
RT05	1	1	1	GD05272120	Resistor, 2.7kΩ ±5% 1/4W
RT06	1	1	1	GD05272120	Resistor, 2.7kΩ ±5% 1/4W
RT07	1	1	1	GD05272120	Resistor, 2.7kΩ ±5% 1/4W
RT08	1	1	1	GD05272120	Resistor, 2.7kΩ ±5% 1/4W
RT09	1	1	1	GD05432140	Resistor, 4.3kΩ ±5% 1/4W
RT10	1	1	1	GD05432140	Resistor, 4.3kΩ ±5% 1/4W
RT11	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT12	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT13	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT14	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT15	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT16	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT17	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT18	1	1	1	GD05201140	Resistor, 200Ω ±5% 1/4W
RT19	1	1	1	GD05820140	Resistor, 82Ω ±5% 1/4W
RT20	1	1	1	GD05820140	Resistor, 82Ω ±5% 1/4W
RT21	1	1	1	GD05820140	Resistor, 82Ω ±5% 1/4W
RT22	1	1	1	GD05820140	Resistor, 82Ω ±5% 1/4W
CV01	1	1	1	DK18203010	Ceramic Cap., 0.02μF 50V
CV02	1	1	1	DK18203010	Ceramic Cap., 0.02μF 50V
CV03	1	1	1	DK18203010	Ceramic Cap., 0.02μF 50V

- (U) for U.S.A.
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
CV04	1	1	1	DF17104010	Film Cap., 0.11μF 50V
JV01	1	1	1	YT02040150	Terminal, 4P RCA
JV02	1	1	1	YT02040150	Terminal, 4P RCA
JV03	1		1	BY01050060	Jack, RCA (DIN)
JV03	1	1	1	YT02040150	Terminal, 4P RCA
JV04	1		1	BY01050060	Jack, RCA (DIN)
JV04	1	1	1	YT02040150	Terminal, 4P RCA
JV05	1	1	1	YJ06000400	Jack, 10P AMP
JV06	1	1	1	YJ06000400	Jack, 10P AMP
JV07	1	9	9	YP10001130	Plug
JV15					
JV16	1	1	1	YT02040210	Terminal, 4P RCA
JV17	1	1	1	YP10001130	Plug
JV18	1	1	1	YP10001130	Plug
PV00	1	1	1	YF29640010	P.W. Board
	1	1	1	ZZ29641010	P.W. Board Assembly
	1	1	1	ZZ29648010	P.W. Board Assembly
RV01	1			RT05394140	Resistor, 390kΩ ±5% 1W
RV02	1			RT05394140	Resistor, 390kΩ ±5% 1W
RV03	1			RT05394140	Resistor, 390kΩ ±5% 1W
RV04	1			RT05394140	Resistor, 390kΩ ±5% 1W
RV05	1			RT05104140	Resistor, 100kΩ ±5% 1W
RV06	1			RT05104140	Resistor, 100kΩ ±5% 1W
RV07	1			RT05104140	Resistor, 100kΩ ±5% 1W
RV08	1			RT05104140	Resistor, 100kΩ ±5% 1W
JW01	1	1	1	YJ01000860	Jack, Headphone
JW02	1	7	7	YP10001130	Plug
JW08	1	7	7	YP10001130	Plug
PW00	1	1	1	YF29640020	P.W. Board
	1	1	1	ZZ29641020	P.W. Board Assembly
RW01	1	1	1	GJ05331010	Resistor, 330Ω ±5% 1W
RW02	1	1	1	GJ05331010	Resistor, 330Ω ±5% 1W
RW03	1	1	1	GJ05151010	Resistor, 150Ω ±5% 1W
RW04	1	1	1	GJ05151010	Resistor, 150Ω ±5% 1W
SW01	1	1	1	SP04020210	Pushswitch
C001	1			DQ07473540	Oil-Paper Cap., 0.047μF ±20% 450V
C002	1			DQ07473540	Oil-Paper Cap., 0.047μF ±20% 450V
C003	1	1	1	E112906310	Electrolytic Cap., 12000μF×2 63V
C004	1	1	1	DF17104520	Film Cap., 0.1μF ±20% 200V
C005	1	1	1	DF17104520	Film Cap., 0.1μF ±20% 200V
C006	1	1	1	EQ10601610	Electrolytic Cap., 10μF 16V
C007	1	1	1	EQ10601610	Electrolytic Cap., 10μF 16V
F001	1			FS10300900	Fuse, SGA 3A
F001	1			FS10600040	Fuse, UL MGC 6A
G001	1			BF10400040	Cap Comp.
G001	1			BF33300020	Cap Comp., 0.033μF+120ΩECQ-JC
J001	1	1	1	YJ01001010	Jack, MIC
J002	1	1	1	YJ01001010	Jack, MIC
J004	1	1	1	YT01010050	Terminal, Ground
J005	1	1	1	YT03040160	Terminal

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION
	U	C	E		
J006	1	1	1	YT03040160	Terminal
J007	1	4	4	YJ04000560	Jack, AC Outlet
J010					
J011	1	8	8	YJ05000220	Jack, Transistor Socket
J018					
J019	1	1	1	YJ05000250	Jack, LED Socket
J020	1	1	1	YJ06001040	Jack, 3P Jack
J021	1	1	1	YJ06001050	Jack
J022	1	1	1	YJ06001040	Jack, 3P
J023	1	1	1	YJ06001450	Jack, 6P
J024	1	1	1	YJ06001050	Jack, 5P
J025	1	1	1	YJ06001040	Jack, 3P
J026	1			YJ08000220	Fuse Holder 20mm
J026	1			YJ08000230	Fuse Holder
J027	1			BY03110010	Voltage Selector
J028	1	1	1	YJ06001040	Jack
J029	1			YL09030010	Terminal, Connector
J031	1	1	1	YJ05000250	Jack, LED Socket
J032	1	1	1	YJ05000250	Jack, LED Socket
J033	1	1	1	YJ06001040	Jack, 3P
J034	1	1	1	YJ06001040	Jack, 3P
L001	1			TS61406050	Power Transformer
L001	1			TS61406060	Power Transformer
Q001	1	1	1	HT404272A0	Transistor, 2SD427 (R or O)
Q002	1	1	1	HT205572A0	Transistor, 2SB557 (R or O)
Q003	1	1	1	HT404272A0	Transistor, 2SD427 (R or O)
Q004	1	1	1	HT205572A0	Transistor, 2SB557 (R or O)
Q005	1	1	1	HT404272A0	Transistor, 2SD427 (R or O)
Q006	1	1	1	HT205572A0	Transistor, 2SB557 (R or O)
Q007	1	1	1	HT404272A0	Transistor, 2SD427 (R or O)
Q008	1	1	1	HT205572A0	Transistor, 2SB557 (R or O)
Q009	1	1	1	HD20004290	Diode, S5VB-20
Q010	1	1	1	HL10004030	L.E.D., 132B
Q011	1	1	1	HL10004030	L.E.D., SLP-132B
Q012	1	1	1	HL10004030	L.E.D., SLP-132B
S001	1	1	1	SP02020210	Pushswitch, Power TV-5
S002	1	1	1	SS02020380	Slide Switch, AC-DC Coupling
W001	1			YC01900030	A.C. Power Cord
W001	1	1	1	YC02400170	A.C. Power Cord
C401	1	1	1	EE47505040	Electrolytic Cap., 4.7μF ±20% 50V
C402	1	1	1	EE47505040	Electrolytic Cap., 4.7μF ±20% 50V
C405	1	1	1	DD15600010	Ceramic Cap., 60pF ±5% 50V
C406	1	1	1	DD15600010	Ceramic Cap., 60pF ±5% 50V
C409	1	1	1	DD15101020	Ceramic Cap., 100pF ±5% 50V
C410	1	1	1	DD15101020	Ceramic Cap., 100pF ±5% 50V
C411	1	1	1	DD15101020	Ceramic Cap., 100pF ±5% 50V
C412	1	1	1	DD15101020	Ceramic Cap., 100pF ±5% 50V
C413	1	1	1	EE10701640	Electrolytic Cap., 100μF ±20% 16V
C414	1	1	1	EE10701640	Electrolytic Cap., 100μF ±20% 16V
C415	1	1	1	DF65101010	Film Cap., 100pF ±5% 50V

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION					REF. DESIG.	Q'TY			PART NO.	DESCRIPTION				
	U	C	E								U	C	E						
C416	1	1	1	DF65101010	Film Cap.,	100pF	±5%	50V		R427	1	1	1	RT05681140	Resistor,	680Ω	±5%	1/4W	
C417	1	1	1	DD11050010	Ceramic Cap.,	5pF		50V		R428	1	1	1	RT05681140	Resistor,	680Ω	±5%	1/4W	
C418	1	1	1	DD11050010	Ceramic Cap.,	5pF		50V		R429	1	1	1	RT05181140	Resistor,	180Ω	±5%	1/4W	
C419	1	1	1	EE47505040	Electrolytic Cap.,	4.7μF	±20%	50V		R430	1	1	1	RT05181140	Resistor,	180Ω	±5%	1/4W	
C420	1	1	1	EE47505040	Electrolytic Cap.,	4.7μF	±20%	50V		R431	1	1	1	RT05474140	Resistor,	470kΩ	±5%	1/4W	
C423	1	1	1	DF65681010	Film Cap.,	680pF	±5%	50V		R432	1	1	1	RT05474140	Resistor,	470kΩ	±5%	1/4W	
C424	1	1	1	DF65681010	Film Cap.,	680pF	±5%	50V		R433	1	1	1	RT05683140	Resistor,	68kΩ	±5%	1/4W	
C425	1	1	1	DF14112010	Film Cap.,	1100pF	±2%	50V		R434	1	1	1	RT05683140	Resistor,	68kΩ	±5%	1/4W	
C426	1	1	1	DF14112010	Film Cap.,	1100pF	±2%	50V		R435	1	1	1	RT05823140	Resistor,	82kΩ	±5%	1/4W	
C427	1	1	1	DF14362010	Film Cap.,	3600pF	±2%	50V		R436	1	1	1	RT05823140	Resistor,	82kΩ	±5%	1/4W	
C428	1	1	1	DF14362010	Film Cap.,	3600pF	±2%	50V		R437	1	1	1	RT05753140	Resistor,	75kΩ	±5%	1/4W	
C429	1	1	1	EE10505040	Electrolytic Cap.,	1μF	±20%	50V		R438	1	1	1	RT05753140	Resistor,	75kΩ	±5%	1/4W	
C430	1	1	1	EE10505040	Electrolytic Cap.,	1μF	±20%	50V		R439	1	1	1	GF05560120	Resistor,	56Ω	±5%	1/4W	
C431	1	1	1	DD15300010	Ceramic Cap.,	30pF	±5%	50V		R440	1	1	1	GF05560120	Resistor,	56Ω	±5%	1/4W	
C432	1	1	1	DD15300010	Ceramic Cap.,	30pF	±5%	50V		C701	1	1	1	DF65251010	Film Cap.,	250pF	±5%	50V	
C433	1	1	1	EA10603590	Electrolytic Cap.,	10μF		35V		C702	1	1	1	DF65251010	Film Cap.,	250pF	±5%	50V	
C434	1	1	1	EA10603590	Electrolytic Cap.,	10μF		35V		C703	1	1	1	DF65162010	Film Cap.,	1600pF	±5%	50V	
C435	1	1	1	EA47605090	Electrolytic Cap.,	47μF		50V		C704	1	1	1	DF65162010	Film Cap.,	1600pF	±5%	50V	
C436	1	1	1	EA47605090	Electrolytic Cap.,	47μF		50V		C705	1	1	1	DF16473010	Film Cap.,	0.047μF	±10%	50V	
C437	1	1	1	DD15251010	Ceramic Cap.,	250pF	±5%	50V		C706	1	1	1	DF16473010	Film Cap.,	0.047μF	±10%	50V	
C438	1	1	1	DD15251010	Ceramic Cap.,	250pF	±5%	50V		C707	1	1	1	EA22603590	Electrolytic Cap.,	22μF		35V	
Q401	1	1	1	HT108722D0	Transistor,	2SA872A	(D or E)			C708	1	1	1	EA22603590	Electrolytic Cap.,	22μF		35V	
Q402	1	1	1	HT108722D0	Transistor,	2SA872A	(D or E)			C709	1	1	1	DD15500500	Ceramic Cap.,	50pF	±5%	500V	
Q403	1	1	1	HT108722D0	Transistor,	2SA872A	(D or E)			C710	1	1	1	DD15500500	Ceramic Cap.,	50pF	±5%	500V	
Q404	1	1	1	HT108722D0	Transistor,	2SA872A	(D or E)			C711	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
Q405	1	1	1	HT317752E0	Transistor,	2SC1775A	(E or F)			C712	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
Q406	1	1	1	HT317752E0	Transistor,	2SC1775A	(E or F)			C713	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
Q407	1	1	1	HT318852CO	Transistor,	2SC1885	(R or S)			C714	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
Q408	1	1	1	HT109122C0	Transistor,	2SA912	(R or S)			C715	1	1	1	EA22603590	Electrolytic Cap.,	22μF		100V	
Q409	1	1	1	HT318852CO	Transistor,	2SC1885	(R or S)			C716	1	1	1	EA22603590	Electrolytic Cap.,	22μF		100V	
Q410	1	1	1	HT109122C0	Transistor,	2SA912	(R or S)			C717	1	1	1	DF65301510	Film Cap.,	300pF	±5%		
R401	1	1	1	RT05513140	Resistor,	51kΩ	±5%	1/4W		C718	1	1	1	DF65301510	Film Cap.,	300pF	±5%		
R402	1	1	1	RT05513140	Resistor,	51kΩ	±5%	1/4W		C719	1	1	1	DF65271510	Film Cap.,	270pF	±5%		
R403	1	1	1	RT05104140	Resistor,	1MΩ	±5%	1/4W		C720	1	1	1	DF65271510	Film Cap.,	270pF	±5%		
R404	1	1	1	RT05105140	Resistor,	1MΩ	±5%	1/4W		C721	1	1	1	DF16473010	Film Cap.,	0.047μF	±10%	50V	
R405	1	1	1	RT05102140	Resistor,	1kΩ	±5%	1/4W		C722	1	1	1	DF16473010	Film Cap.,	0.047μF	±10%	50V	
R406	1	1	1	RT05102140	Resistor,	1kΩ	±5%	1/4W		C723	1	1	1	EA22605090	Electrolytic Cap.,	22μF		50V	
R407	1	1	1	RT05223140	Resistor,	22kΩ	±5%	1/4W		C724	1	1	1	EA22605090	Electrolytic Cap.,	22μF		50V	
R408	1	1	1	RT05223140	Resistor,	22kΩ	±5%	1/4W		C725	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
R409	1	1	1	RT05394140	Resistor,	390kΩ	±5%	1/4W		C726	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
R410	1	1	1	RT05394140	Resistor,	390kΩ	±5%	1/4W		C727	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
R411	1	1	1	RT02821140	Resistor,	820Ω	±2%	1/4W		C728	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
R412	1	1	1	RT02821140	Resistor,	820Ω	±2%	1/4W		C729	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
R413	1	1	1	RT02914140	Resistor,	910kΩ	±2%	1/4W		C730	1	1	1	DF17104540	Film Cap.,	0.1μF		100V	
R414	1	1	1	RT02914140	Resistor,	910kΩ	±2%	1/4W		C731	1	1	1	EA47606390	Electrolytic Cap.,	47μF		63V	
R415	1	1	1	RT02513140	Resistor,	51kΩ	±2%	1/4W		C732	1	1	1	EA47606390	Electrolytic Cap.,	47μF		63V	
R416	1	1	1	RT02513140	Resistor,	51kΩ	±2%	1/4W		C733	1	1	1	EA47606390	Electrolytic Cap.,	47μF		63V	
R417	1	1	1	RT05332140	Resistor,	3.3kΩ	±5%	1/4W		C734	1	1	1	EA47606390	Electrolytic Cap.,	47μF		63V	
R418	1	1	1	RT05332140	Resistor,	3.3kΩ	±5%	1/4W		J701	1	1	1	YP06001040	Plug,	3P			
R419	1	1	1	RT05132140	Resistor,	1.3kΩ	±5%	1/4W		J704	1	1	1						
R420	1	1	1	RT05132140	Resistor,	150kΩ	±5%	1/4W		J705	1	1	1	YP06000540	Plug,	6P (SMK)			
R421	1	1	1	RT05154140	Resistor,	150kΩ	±5%	1/4W		L701	1	1	1	LC22620010	Choke Coil				
R422	1	1	1	RT05154140	Resistor,	22Ω	±5%	1/4W		L702	1	1	1	LC22620010	Choke Coil				
R423	1	1	1	RT05220140	Resistor,	22Ω	±5%	1/4W		P700	1	1	1	YG29640020	P700, MAIN AMP BOARD				
R424	1	1	1	RT05220140	Resistor,	22Ω	±5%	1/4W			1	1	1	ZZ29761020	P.W. Board				
R425	1	1	1	RT05220140	Resistor,	22Ω	±5%	1/4W							P.W. Board Assembly				
R426	1	1	1	RT05220140	Resistor,	22Ω	±5%	1/4W											

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	
	U	C	E			
Q701	1	1	1	HC10003200	IC, 2SK109	(C or D)
Q702	1	1	1	HC10003200	IC, 2SK109	(C or D)
Q703	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q704	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q705	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q706	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q707	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q708	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q709	1	1	1	HT108722D0	Transistor, 2SA872A	(D or E)
Q710	1	1	1	HT108722D0	Transistor, 2SA872A	(D or E)
Q711	1	1	1	HT108722D0	Transistor, 2SA872A	(D or E)
Q712	1	1	1	HT108722D0	Transistor, 2SA872A	(D or E)
Q713	1	1	1	HT108722D0	Transistor, 2SA872A	(D or E)
Q714	1	1	1	HT108722D0	Transistor, 2SA872A	(D or E)
Q715	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q716	1	1	1	HT317752D0	Transistor, 2SC1775A	(D or E)
Q717	1	1	1	HT108722E0	Transistor, 2SA872A	(E or F)
Q718	1	1	1	HT108722E0	Transistor, 2SA872A	(E or F)
Q719	1	1	1	HT108722E0	Transistor, 2SA872A	(E or F)
Q720	1	1	1	HT108722E0	Transistor, 2SA872A	(E or F)
Q721	1	1	1	HT109142B0	Transistor, 2SA914	(R or S)
Q722	1	1	1	HT109142B0	Transistor, 2SA914	(R or S)
Q723	1	1	1	HT319532B0	Transistor, 2SC1953	(R or S)
Q724	1	1	1	HT319532B0	Transistor, 2SC1953	(R or S)
Q725	1	1	1	HT319132B0	Transistor, 2SC1913	(R or S)
Q726	1	1	1	HT319132B0	Transistor, 2SC1913	(R or S)
Q727	1	1	1	HT109132B0	Transistor, 2SA913	(R or S)
Q728	1	1	1	HT109132B0	Transistor, 2SA913	(R or S)
Q729	1	1	1	HD20011050	Diode, 1S1555	
Q730	1	1	1	HD20011050	Diode, 1S1555	
Q731	1	1	1	HD30046090	Zener, WZ-310	
Q732	1	1	1	HD30046090	Zener, WZ-310	
Q733	1	1	1	HD30046090	Zener, WZ-310	
Q734	1	1	1	HD30046090	Zener, WZ-310	
Q735	1	1	1	HD20011050	Diode, 1S1555	
Q736	1	1	1	HD20011050	Diode, 1S1555	
Q737	1	1	1	HD20003110	Diode, 1S2471	
Q738	1	1	1	HD20003210	Diode, 1S2471	
Q739	1	1	1	HD20003210	Diode, 1S2471	
Q740	1	1	1	HD20003210	Diode, 1S2471	
Q741	1	1	1	HV00004120	Varistor, MV-1	
Q742	1	1	1	HV00004120	Varistor, MV-1	
Q743	1	1	1	HV00004120	Varistor, MV-1	
Q744	1	1	1	HV00004120	Varistor, MV-1	
Q745	1	1	1	HH00007030	Thermistor, SDT-100	
Q746	1	1	1	HH00007030	Thermistor, SDT-100	
Q747	1	1	1	HH00007030	Thermistor, SDT-100	
Q748	1	1	1	HH00007030	Thermistor, SDT-100	
Q749	1	1	1	HD20005010	Diode, W06B	
Q750	1	1	1	HD20005010	Diode, W06B	
Q751	1	1	1	HD20005010	Diode, W06B	
Q752	1	1	1	HD20005010	Diode, W06B	
R701	1	1	1	GD05332140	Resistor, 3.3kΩ ±5% 1/4W	
R702	1	1	1	GD05332140	Resistor, 3.3kΩ ±5% 1/4W	
R703	1	1	1	GD05333140	Resistor, 33kΩ ±5% 1/4W	
R704	1	1	1	GD05333140	Resistor, 33kΩ ±5% 1/4W	
R705	1	1	1	GD05821140	Resistor, 820Ω ±5% 1/4W	

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION	
	U	C	E			
R706	1	1	1	GD05821140	Resistor,	820Ω ±5% 1/4W
R707	1	1	1	GD05821140	Resistor,	820Ω ±5% 1/4W
R708	1	1	1	GD05821140	Resistor,	820Ω ±5% 1/4W
R709	1	1	1	GD05101140	Resistor,	100Ω ±5% 1/4W
R710	1	1	1	GD05101140	Resistor,	100Ω ±5% 1/4W
R711	1	1	1	GD05513140	Resistor,	51kΩ ±5% 1/4W
R712	1	1	1	GD05513140	Resistor,	51kΩ ±5% 1/4W
R713	1	1	1	GD05152140	Resistor,	1.5kΩ ±5% 1/4W
R714	1	1	1	GD05152140	Resistor,	1.5kΩ ±5% 1/4W
R715	1	1	1	GD05753140	Resistor,	75kΩ ±5% 1/4W
R716	1	1	1	GD05753140	Resistor,	75kΩ ±5% 1/4W
R717	1	1	1	GD05153140	Resistor,	15kΩ ±5% 1/4W
R718	1	1	1	GD05153140	Resistor,	15kΩ ±5% 1/4W
R719	1	1	1	GD05112140	Resistor,	1.1kΩ ±5% 1/4W
R720	1	1	1	GD05112140	Resistor,	1.1kΩ ±5% 1/4W
R721	1	1	1	GD05473140	Resistor,	47kΩ ±5% 1/4W
R722	1	1	1	GD05473140	Resistor,	47kΩ ±5% 1/4W
R723	1	1	1	GD05102140	Resistor,	1kΩ ±5% 1/4W
R724	1	1	1	GD05102140	Resistor,	1kΩ ±5% 1/4W
R725	1	1	1	GD05223140	Resistor,	22kΩ ±5% 1/4W
R726	1	1	1	GD05223140	Resistor,	22kΩ ±5% 1/4W
R727	1	1	1	GJ05222010	Resistor,	2.2kΩ ±5% 1/4W
R728	1	1	1	GJ05222010	Resistor,	2.2kΩ ±5% 1/4W
R729	1	1	1	GJ05182010	Resistor,	1.8kΩ ±5% 1/4W
R730	1	1	1	GJ05182010	Resistor,	1.8kΩ ±5% 1/4W
R731	1	1	1	GD05153140	Resistor,	15kΩ ±5% 1/4W
R732	1	1	1	GD05153140	Resistor,	15kΩ ±5% 1/4W
R733	1	1	1	GD05153140	Resistor,	15kΩ ±5% 1/4W
R734	1	1	1	GD05153140	Resistor,	15kΩ ±5% 1/4W
R735	1	1	1	GD05561140	Resistor,	560Ω ±5% 1/4W
R736	1	1	1	GD05561140	Resistor,	560Ω ±5% 1/4W
R737	1	1	1	GD05561140	Resistor,	560Ω ±5% 1/4W
R738	1	1	1	GD05561140	Resistor,	560Ω ±5% 1/4W
R739	1	1	1	RA02230050	Trimming Resistor, 22kΩ CR29R	
R740	1	1	1	RA02230050	Trimming Resistor, 22kΩ CR29R	
R741	1	1	1	GD05203140	Resistor,	20kΩ ±5% 1/4W
R742	1	1	1	GD05203140	Resistor,	20kΩ ±5% 1/4W
R743	1	1	1	GD05222140	Resistor,	2.2kΩ ±5% 1/4W
R744	1	1	1	GD05222140	Resistor,	2.2kΩ ±5% 1/4W
R745	1	1	1	GD05222140	Resistor,	2.2kΩ ±5% 1/4W
R746	1	1	1	GD05222140	Resistor,	2.2kΩ ±5% 1/4W
R747	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R748	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R749	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R750	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R751	1	1	1	GD05151140	Resistor,	150Ω ±5% 1/4W
R752	1	1	1	GD05151140	Resistor,	150Ω ±5% 1/4W
R753	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R754	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R755	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R756	1	1	1	GD05330140	Resistor,	33Ω ±5% 1/4W
R757	1	1	1	GD05273140	Resistor,	27kΩ ±5% 1/4W
R758	1	1	1	GD05273140	Resistor,	27kΩ ±5% 1/4W
R759	1	1	1	GF05100140	Resistor,	10Ω ±5% 1/4W
R760	1	1	1	GF05100140	Resistor,	10Ω ±5% 1/4W
R761	1	1	1	GF05100140	Resistor,	10Ω ±5% 1/4W
R762	1	1	1	GF05100140	Resistor,	10Ω ±5% 1/4W

- (U) for U.S.A
- (C) for Canada
- (E) for Europe

REF. DESIG.	Q'TY			PART NO.	DESCRIPTION					REF. DESIG.	Q'TY			PART NO.	DESCRIPTION				
	U	C	E								U	C	E						
R763	1	1	1	GD05100140	Resistor,	10Ω	±5%	1/4W		R855	1	1	1	RT05222140	Resistor,	2.2kΩ	±5%	1/4W	
R764	1	1	1	GD05100140	Resistor,	10Ω	±5%	1/4W		R856	1	1	1	RT05222140	Resistor,	2.2kΩ	±5%	1/4W	
R765	1	1	1	GD05100140	Resistor,	10Ω	±5%	1/4W		R857	1	1	1	GJ05562010	Resistor,	5.6kΩ	±5%	1W	
R766	1	1	1	GD05100140	Resistor,	10Ω	±5%	1/4W		R858	1	1	1	RT05273140	Resistor,	27kΩ	±5%	1/4W	
R767	1	1	1	GJ05562010	Resistor,	5.6kΩ	±5%	1W		R859	1	1	1	RT05682140	Resistor,	6.8kΩ	±5%	1/4W	
R768	1	1	1	GJ05562010	Resistor,	5.6kΩ	±5%	1W		R860	1	1	1	RT05333140	Resistor,	33kΩ	±5%	1/4W	
R769	1	1	1	GJ05562010	Resistor,	5.6kΩ	±5%	1W		R861	1	1	1	RT05273140	Resistor,	27kΩ	±5%	1/4W	
R770	1	1	1	GJ05562010	Resistor,	5.6kΩ	±5%	1W		R862	1	1	1	GJ05472010	Resistor,	4.7kΩ	±5%	1W	
R771	1	1	1	GD05101140	Resistor,	100Ω	±5%	1/4W		R863	1	1	1	RT05472140	Resistor,	4.7kΩ	±5%	1/4W	
R772	1	1	1	GD05101140	Resistor,	100Ω	±5%	1/4W		R864	1	1	1	RT05562140	Resistor,	5.6kΩ	±5%	1/4W	
R773	1	1	1	GD05101140	Resistor,	100Ω	±5%	1/4W											
R774	1	1	1	GD05101140	Resistor,	100Ω	±5%	1/4W											
R775	1	1	1	GF05330140	Resistor,	33Ω	±5%	1/4W											
R776	1	1	1	GF05330140	Resistor,	33Ω	±5%	1/4W											
R777	1	1	1	GF05330140	Resistor,	33Ω	±5%	1/4W											
R778	1	1	1	GF05330140	Resistor,	33Ω	±5%	1/4W											
R779	1	1	1	GF05240120	Resistor,	24Ω	±5%	1/4W											
R780	1	1	1	GF05240120	Resistor,	24Ω	±5%	1/4W											
R781	1	1	1	GF05240120	Resistor,	24Ω	±5%	1/4W											
R782	1	1	1	GF05240120	Resistor,	24Ω	±5%	1/4W											
R787	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R788	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R789	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R790	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R791	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R792	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R793	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R794	1	1	1	GW10332030	Resistor,	0.33Ω	±10%	3W											
R795	1	1	1	GJ05100030	Resistor,	10Ω	±5%	3W											
R796	1	1	1	GJ05100030	Resistor,	10Ω	±5%	3W											
R797	1	1	1	GJ050222020	Resistor,	2.2Ω	±5%	2W											
R798	1	1	1	GJ050222020	Resistor,	2.2Ω	±5%	2W											
C851	1	1	1	DK18103510	Ceramic Cap.,	0.01μF		500V											
C852	1	1	1	DK18103510	Ceramic Cap.,	0.01μF		500V											
C853	1	1	1	EA47706310	Electrolytic Cap.	470μF		63V											
C854	1	1	1	EA47706310	Electrolytic Cap.	470μF		63V											
C855	1	1	1	EA10701690	Electrolytic Cap.	,100μF		16V											
C856	1	1	1	EA10701690	Electrolytic Cap.	,100μF		16V											
C857	1	1	1	DF16102010	Film Cap.,	0.001μF	±10%	50V											
C858	1	1	1	DF16102010	Film Cap.,	0.001μF	±10%	50V											
C859	1	1	1	EA10701690	Electrolytic Cap.	,100μF		16V											
C860	1	1	1	EA33505090	Electrolytic Cap.	,3.3μF		50V											
C861	1	1	1	EA33505090	Electrolytic Cap.	,3.3μF		50V											
Q851	1	1	1	HD20013030	Diode,	DS-133B													
Q852	1	1	1	HD20013030	Diode,	DS-133B													
Q853	1	1	1	HT403132P0	Transistor,	2SD313		(D or E)											
Q854	1	1	1	HT205072P0	Transistor,	2SB507		(D or E)											
Q855	1	1	1	HT315091Q0	Transistor,	2SC1509		(Q)											
Q856	1	1	1	HT107771Q0	Transistor,	2SA777		(Q)											
Q857	1	1	1	HD30023090	Zener,	WZ-071													
Q858	1	1	1	HD30023090	Zener,	WZ-071													
Q859	1	1	1	HD20003210	Diode,	1S2471	Black												
Q860	1	1	1	HD20003210	Diode,	1S2471	Black												
R851	1	1	1	GJ050222010	Resistor,	2.2Ω	±5%	1W											
R852	1	1	1	GJ050222010	Resistor,	2.2Ω	±5%	1W											
R853	1	1	1	RT05332140	Resistor,	3.3kΩ	±5%	1/4W											
R854	1	1	1	RT05332140	Resistor,	3.3kΩ	±5%	1/4W											

## 12. TECHNICAL SPECIFICATIONS

### ● FOR U.S.A. MODEL ONLY

#### AMPLIFIER SECTION

##### RATED POWER OUTPUT, MINIMUM CONTINUOUS

AVERAGE POWER PER CHANNELS, BOTH CHANNELS DRIVEN .....	90 WATTS
POWER BAND .....	20 Hz to 20 kHz
TOTAL HARMONIC DISTORTION .....	0.03%
LOAD IMPEDANCE .....	8 OHMS

##### RATED POWER OUTPUT, MINIMUM CONTINUOUS

AVERAGE POWER PER CHANNELS, BOTH CHANNELS DRIVEN .....	113 WATTS
POWER BAND .....	20 Hz to 20 kHz
TOTAL HARMONIC DISTORTION .....	0.06%
LOAD IMPEDANCE .....	4 OHMS

#### I.M. Distortion (IHF method, 60 Hz

and 7 kHz mixed 4:1  
at rated power output)

at 8 ohm load impedance ..... 0.03%  
at 4 ohm load impedance ..... 0.09%

Damping Factor (at 20 Hz) ..... 60

Sensitivity (at MAIN IN) ..... 1.5 V

Impedance (at MAIN IN) ..... 36 k ohms

Frequency Response for Power Amp Only  
(at 1 watt output, 20 Hz to 20 kHz) ..... ±0.2 dB

S/N Ratio (MAIN IN, "A" Weighted) ..... 110 dB

#### PREAMPLIFIER SECTION

##### Phono

Input Overload at 1 kHz ..... 310 mV

Equivalent Input Noise ("A" Weighted) ..... 0.48 µV

Dynamic Range  
(Dynamic Range is the ratio of input  
overload to equivalent input noise) ..... 117 dB

Input Sensitivity ..... 1.8 mV

Input Impedance ..... 47 k ohms

Frequency Response, RIAA 20 Hz to 20 kHz ..... ±0.2 dB

Signal-to-Noise Ratio ("A" Weighted)  
(at rated output and 7.75 mV input) ..... 83 dB

High Level (Aux and Tape)

Input Sensitivity ..... 180 mV

Input Impedance ..... 20 k ohms

#### Frequency Response

(includes Power Amp) ..... 5 Hz to 60 kHz ±1.0 dB

#### Signal-to-Noise Ratio ("A" Weighted)

(ref. to rated output and 775 mV input) ..... 93 dB

#### Output Levels

Tape Out (ref. 7.75 mV at Phono inputs) ..... 775 mV

Pre-Out (ref. 180 mV at Aux inputs) ..... 1.5 V

(ref. 500 mV at Aux inputs, Main  
Amp disconnected) ..... 4.2 V

#### Output Impedance

Tape Out ..... 330 ohms

Pre-Out ..... 220 ohms

#### GENERAL

Power Requirements ..... 120 VAC 60 Hz

Power Consumption at rated output,  
both channels operating ..... 370 Watt

Idling Power (Volume Control at zero) ..... 65 Watt

#### Dimensions

Panel Width ..... 416 mm (16-3/8")

Panel Height ..... 146 mm ( 5-3/4")

Depth ..... 316 mm (12-3/8")

#### Weight

Unit alone ..... 15.0 kg (33.0 lbs)

Packed for Shipment ..... 17.0 kg (37.4 lbs)

**●FOR EUROPEAN MODEL ONLY**

Audio Section

POWER OUTPUT AT 1% DISTORTION .....	160 W
RATED POWER OUTPUT, 1 kHz .....	113 W
TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT, 1 kHz .....	0.09%
I.M. DISTORTION AT RATED POWER OUTPUT (I.H.F. METHOD, 300 Hz AND 10 kHz MIXED 4:1 AT RATED POWER OUTPUT) .....	0.09%
POWER BANDWIDTH, ½ RATED POWER OUTPUT .....	7 Hz ~ 70 kHz
LOAD IMPEDANCE .....	4 OHMS
POWER OUTPUT AT 1% DISTORTION .....	105 W
RATED POWER OUTPUT, 1 kHz .....	90 W
TOTAL HARMONIC DISTORTION AT RATED POWER OUTPUT, 1 kHz .....	0.03%
I.M. DISTORTION AT RATED POWER OUTPUT (I.H.F. METHOD, 300 Hz AND 10 kHz MIXED 4:1 AT RATED POWER OUTPUT) .....	0.03%
POWER BANDWIDTH, ½ RATED POWER OUTPUT .....	7 Hz ~ 70 kHz
LOAD IMPEDANCE .....	8 OHMS

Damping Factor, SP Output

40 Hz .....	60
1 kHz .....	50
12.5 kHz .....	45

Frequency Response

Phono 40 Hz ~ 1.6 kHz .....	±0.5 dB
Aux 40 Hz ~ 1.6 kHz .....	±0.5 dB
Main In 40 Hz ~ 1.6 kHz .....	±0.2 dB

Signal-to-Noise Ratio, 1 kHz

Phono .....	56 dB
Aux .....	56 dB
Main In .....	58 dB

Input Sensitivity, 1 kHz

(Rated Input Voltage)

Phono .....	1.8 mV
Aux .....	180 mV
Main In .....	1.5 V

Input Impedance, 1 kHz

Phono .....	47 k ohms
Aux .....	20 k ohms
Main In .....	36 k ohms

Phono Equivalent Input Noise .....

1.0 µV

Phono Dynamic Range .....

110 dB

Phono Input Capacitance .....

100 pF

Channel Balance

Phono 0 ~ -40 dB .....	2.5 dB
Aux 40 Hz ~ 16 kHz .....	2.0 dB
Main In .....	1.0 dB

Interchannel Crosstalk

Phono 1 kHz .....	43 dB
250 Hz ~ 10 kHz .....	40 dB
Aux 1 kHz .....	45 dB
250 Hz ~ 10 kHz .....	33 dB
Tape 1 kHz .....	45 dB
250 Hz ~ 10 kHz .....	33 dB
Main In 1 kHz .....	55 dB
250 Hz ~ 10 kHz .....	50 dB

Intersource Crosstalk, Worst Point

1 kHz .....	45 dB
250 Hz ~ 10 kHz .....	33 dB

Output Voltage, 1 kHz

Tape Out .....	0.18 V
Pre Out .....	1.5 V

Output Impedance, 1 kHz

Tape Out .....	330 ohms
Pre Out .....	220 ohms

Power Consumption

Idling .....	60 W
Rated Power, 1 kHz .....	350 W

General

Power Requirements .....

220 V ~, 50 Hz

(E and N versions are featuring an external voltage selector  
for use on 110/120/240 V. Other versions can be  
converted by a qualified technician to operate on  
110/120/240 V.)

Power Consumption at rated output, both

channels operating .....

350 W ±50W

Idling Power .....

60 W ±15W

Semiconductor Complement

Transistors .....

83

Diodes .....

50

Field Effect Transistors .....

4

Dimensions

Panel Width .....

416 mm (16-3/8 inches)

Panel Height .....

146 mm ( 5-3/4 inches)

Depth .....

316 mm (12-3/8 inches)

Weight

Unit Alone .....

15.0 kg (33.0 lbs)

Packed for Shipment .....

17.0 kg (37.4 lbs)